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Syme Memorial Lecture.[1]

THE INTEREST OF THE PRACTISING MEDICAL PROFESSION IN UNDERGRADUATE MEDICAL EDUCATION.

By SIR ALBERT COATES,
Melbourne.

I AM deeply sensible of the honour you have done me in inviting me to deliver the eleventh triennial Syme Memorial Lecture.

It is customary on such occasions to pay some tribute to the man in whose memory the lecture was established. One hundred years ago next month, on July 13, 1859, Sir George Syme was born at Nottingham, England. He came to Australia at an early age and was educated at Wesley College and the University of Melbourne. Your lecturer tonight was obviously not a contemporary of Sir George, and the following details of his career have been learned from earlier Syme Memorial Lectures. The first, a gem of oratory by that classical scholar and surgeon of renown, the late Mr. Fred W. Bird, was given on February 23, 1928, while Sir George was still with us. The second, by the late Dr. A. L. Kenny in 1931, entitled "Syme, the Man and the Surgeon", gives a wonderful biographical record of Sir George.

I knew him slightly in his later days when he was president of the Committee of Management of the Royal Melbourne Hospital, and I had occasion to seek his advice when he was a member of the University Council and I was acting Professor of Anatomy in 1927. Our brief interview and his wise counsel determined the direction of my subsequent academic and professional career.

The praise of a famous man should be oft repeated for the benefit of the younger generation of doctors who may not know very much of one who died thirty years ago, and it is fitting that a résumé of his achievements should be reiterated. A brilliant scholar and exhibitioner at Wesley College, he continued to distinguish himself at the University of Melbourne. In 1879, the class lists in third-year medicine read:

1st Class Honours — none.

2nd Class Honours — G. A. Syme, J. W. Barrett (in that order).

[1] Delivered at a meeting of the Victorian Branch of the British Medical Association on June 3, 1959.

Two years later, the fifth-year list reads:

1st Class Honours — G. A. Syme.

2nd Class Honours — J. W. Barrett, C. Bage.

Syme collected the scholarships for surgery, medicine and forensic medicine.

Let those who disparage honours in the medical course, please note: all three of those men, Sir George Syme, Sir James Barrett and Dr. Charles Bage, added lustre to the profession in Australia. Sir George was a resident medical officer at the Melbourne Hospital in 1882-1883. He then went to England and worked under Lord Lister at King's College Hospital, obtaining his F.R.C.S. in 1885. Returning to Melbourne, he became a demonstrator and examiner in anatomy and out-patient surgeon to the Melbourne Hospital in 1887. He also served as pathologist to the Women's Hospital. For many years he taught anatomy, establishing a custom whereby surgeons to out-patients at the Melbourne Hospital continued in the anatomy school until they were appointed to the indoor staff. This fundamental discipline is perhaps less highly respected nowadays since physiology and biochemistry have extended their boundaries. However, it is generally conceded that sound anatomical training has contributed in no small measure to the prestige of the University of Melbourne's qualifying degree of M.B., B.S.

Sir George Syme was a member of the University Council from 1912 until his death.

His work on the Royal Sanitary Commission in 1888-1889 was in line with his high sense of public duty, as was his enlistment for war service in 1914, the day after war broke out. He volunteered for service anywhere, in any capacity, at any pay. He even volunteered for service in a venereal diseases and measles camp, but official wisdom directed his services into the channel where his skill was more urgently needed. Some of us who were at Gallipoli in 1915 and were in the humbler ranks were comforted to learn that Mr. Syme was the surgeon on the hospital ship *Gascon*. Syme became a casualty; a severe hand infection, resulting from a scratch while operating, nearly cost him his life.

His work for the newly formed Repatriation Department in Australia was monumental.

The Victorian Branch of the British Medical Association owes much to him. Twice its president, he was editor of the *Australian Medical Journal*, and president of the Federal Committee (the parent of the present Federal Council).

He was honoured by His Majesty the King in 1924 by being created a Knight of the British Empire. He continued in a multitude of activities, not the least of which was the founding of the Royal Australasian College of Surgeons. He was its first president, and he died in that exalted office on April 19, 1929. His magnificent work for that body is commemorated regularly by the Syme Oration.

In leaving the subject of this wonderful man, I can only express the hope that before long a competent biographer will record for all time a detailed account of his life, so that posterity will no longer need to depend on the bits and pieces served up by the triennial Syme Lectures.

The title of this lecture is based on the second paragraph in the Hippocratic Oath:

> I swear to honour him who has instructed me in this art as I honour my parents, to share his fate and if occasion arise to provide him with the necessaries of life. His descendants shall be as my own brothers, and I will, if desired, teach them the art without money and without bond, imparting precepts, lectures and other knowledge to my sons, my master's sons and to the students admitted according to the laws of medicine, but to none other.

The late Mr. B. T. Zwar, in May, 1935, gave this lecture with the title "Syme and Medical Education". I do not wish to plagiarize further, hence my remarks will concern the medical profession's responsibility for training an adequate number of recruits—quantity as well as the quality, which was Mr. Zwar's theme. The quality must be preserved, but we need more of it.

The following are some reflections on the question of the needs for medical men by the community, and also on the rights of intelligent boys and girls to follow the calling they desire — medicine, if they possess the necessary matriculation requirements. Denial of these rights is not proper in a democracy.

Is there such a thing as a problem of the supply of doctors in Australia? I believe there is; if there is not now, there soon will be. Despite the large numbers who entered the medical course after the second World War, and who have since settled in practice, we find the following situation: (*a*) The Services—Navy and Air Force especially—have to look elsewhere (the present Commonwealth subsidies to students provide a short-term palliative only). (*b*) Country hospitals have too few doctors—in fact, a special office of the Hospitals and Charities Commission has been set up in England to recruit doctors from abroad. (*c*) Territories and people ostensibly the responsibility of Australia find that New Australians, unacceptable by State Medical Boards, are called in to fill the breach. (*d*) I am informed by heads of medical agencies that there has been a grave shortage of *locum tenentes* since the end of the War in 1945, and that many practising doctors, especially in single-handed practices, are unable to take holidays. (*e*) Other States—for example, Tasmania—which always looked to Melbourne for the training of some of its doctors—have now to look elsewhere. (*f*) Leaders in some of the minor but very important medical specialties have personally informed me of their concern for the lack of recruits in those specialties. I am informed that ophthalmologists are overworked, and some concern is felt at the inroads being made by optometrists. No doubt osteopaths and chiropractors will soon be also seeking government aid for training schools, and who can blame them? (*g*) School medical officers are in short supply according to a member of our profession interested in this service.

Despite the apparent increase in the number of doctors being trained in Victoria, the fact remains that supply does not meet demand. There are various reasons for this seeming anomaly.

Overseas students, mainly Asians, form a section of the student body each year. Medicine has its proportion of these students, either under the Colombo plan or under their own resources. On graduation, these doctors depart for their own country (in Melbourne, 10 or 12 in each year of the medical course).

Many women medical graduates marry nowadays, and for some years may not practise their profession. Some return in later years in specialties, in part-time work in stores, in baby health work, in the school medical service, etc., and in general practice.

Industry is absorbing more male graduates than was dreamed of twenty years ago. The expansion of major industries, such as motor-car building, has opened up a field for the industrial medical officer. A special section of our own Branch of the British Medical Association is devoted to industrial medicine.

Specialties flourish in increasing numbers—for example, allergy, radiotherapy, anæsthesia. Public health services, a reformed mental hygiene department, an enlarging repatriation medical service—all these are but a few of the avenues opening up for doctors. The motor-car kills many, but maims a far larger number, and these casualties are the responsibility of an increasing number of doctors (surgeons, general and plastic, etc.). The advocates of limiting the numbers of graduating doctors argue that disease is being conquered by the immunization of children, by the free use of the "wonder drugs" (antibiotics) and by the advance in cancer therapy.

Has all this diminished the work of doctors? I think not; rather has it increased the burden on the profession. Even the mounting toll of fatal road casualties requires the services of pathologists.

The population of Australia, notably Victoria, is rapidly increasing. Foreign doctors who enter our country are not encouraged to enter practice. They can do our medical course, or alternatively present themselves for examina-

tion by a special board of University examiners. Recent results of this procedure would indicate that the medical register is hardly likely to be greatly enlarged from this source. Most of these are older men, and enter laboratory work.

The University of Melbourne deserves high praise for the manner in which it coped with the large numbers of students in the years immediately following the termination of the two World Wars. The years 1919 to 1926 and 1945 to 1952 taxed the resources of the University, and none more so than the Medical School. The professors and staff and clinical teachers at the teaching hospitals did not fail to preserve a high standard, as can be seen from a study of the honours lists in the examinations of those days. It was a time of emergency, and the academic staff met it. However, the University Council decided, in 1948, to limit the number of students entering the second year of the medical course. The quota was unnecessary in 1954; but a high failure rate at the end of the year produced a reduction in numbers well below the original quota—that is, 90; hence a smaller number graduating in medicine at the end of this year.

The quota was reintroduced in 1956, and now it is in operation at the time of matriculation, 200 being allowed to start the premedical year. A varying but increasing percentage of that group then proceeds to the course proper. Last year 81·5% passed the premedical year, contrasted with 60% in 1955.

It is to be noted that the medical student in Victoria must be a full-time student for six years. There is only one place in which he can do his course. With arts and law there are other means of obtaining qualifications. In engineering there are diploma courses at technical colleges, some of which provide exemption for certain work at the University of Melbourne. It is stated by competent authority that, despite great increases in building and the expenditure of a much increased revenue (derived from the Government and private sources—for example, the present appeal), there will be no lifting of the quota for medical students. This is a matter for the University of Melbourne and beyond the control of any other body.

As one who reluctantly acquiesced in these decisions of the University, at Faculty and Council level, I can only plead that the public pressure engendered may have hastened the decision of the Government to provide more university facilities and to implement the report of the Murray Commission. Further, I agree with my academic colleagues that there is a limit of size for a medical school. I know, from long personal experience as a university teacher, that large classes do not always permit of the personal interest of the teacher in the student. Very large numbers, on the continental model, do not allow efficient individual training. Medicine of all professions is individual.

The Monash University will help to improve things; but I doubt whether any doctors will graduate there for ten years, and in any case it is expected that 60 will be the maximum to graduate then. In the meantime, we shall have the situation in which a rising population has a fixed quota of new doctors each year. The shortage may be met by accepting more graduates from overseas. Fortunately, the Medical Board of Victoria requires only a registrable qualification such as is recognized by the General Medical Council of Great Britain, and not a university degree; otherwise the services of those doctors holding diplomas and licences from overseas colleges would have not been available here.

The figures for overseas doctors registered in Victoria from 1955 to the present are as shown in Table I.

It would appear that next year about 50% of newly-registered doctors will be from overseas. Welcome as these professional men are here, and right as it is that a proportion of migrants to this country should be medical men, it seems likely that we shall depend more and more on overseas doctors to meet our local needs. This is reminiscent of the 1860's, and is not a credit to the foresight of responsible authority in Australia.

The purpose of this lecture is not to apportion blame for the present state of affairs. It exists in many countries, especially those with a fast-developing economy and increasing population. This fact is made plain in *Encyclopædia Britannica*, Volume 15, at page 178. It is no use blaming the Medical Board of Victoria; it is concerned with administering the *Medical Act*, and is not charged with meeting the medical needs of the people. The President of the Medical Board informed a gathering of interested parties, including the Minister of Health, just over two years ago that there was no problem of the supply of doctors in Victoria. Nor can we reasonably accuse the Royal Colleges (of Surgeons, Physicians, Gynæcologists) of being dilatory. They have performed wonders in a few years in post-graduate education in their fields.

If anybody is to blame, it is the British Medical Association in Australia, or the medical profession as a whole. Its voice has been muted of recent years. Many of its leaders have their interest in the newer colleges and associations of specialists. The general body of the profession has not taken a lively enough interest in its recruits. False prophets have not been confined to our profession.

TABLE I.

Overseas Medical Graduates Registered by the Medical Board of Victoria.

Year.	Total.	United Kingdom and Ireland.	New Zealand.	Others.
1955	44	39	5	—
1956	57	41	6	10
1957	63	56	6	1
1958	77	61	3	13
1959 up to and including April	53	44	4	5

[1] Ten were registered in May, 1959.

Each State in Australia has its own Medical Board administering its own *Medical Act*. The Acts differ in some respects. For example, the requirement of the New South Wales Act that registration be deferred until the graduate in medicine has completed a year's hospital practice, does not operate in other States of the Commonwealth. The Western Australian Act has modifications concerning New Australian doctors which are not written in other State Acts. Geography and local needs determine State action in these matters. It is only when a war is declared that the practising doctors in Australia unite as one man, and that all the difficulties inherent in our past colonial history and development are forgotten.

The United States has its separate Acts for all its States and appropriate boards of medical registration. Great Britain has one Act. Registration is possible for several categories of medically qualified people—those holding diplomas of colleges, licentiates of the Societies of Apothecaries, and those who have a university degree—for example, M.B., B.S. It would be invidious to distinguish between these types of qualification; suffice it to say that the M.B., B.S. is the academic equivalent of our Melbourne M.B., B.S. The others are qualifications of competency to practise accepted by the General Medical Council of Great Britain, and they are accepted in Victoria.

Reciprocity for registration of Victorian doctors in England depends on the acceptance for registration of all registered in Great Britain. New Zealand has recently questioned the fairness of this arrangement, which leads to expansion of the profession by overseas practitioners of an academic standard below that of the locally trained graduate.

It is well for Melbourne-trained doctors to remember that the University of Melbourne's medical course, commenced 94 years ago, was the first five-year course in the British Empire, and it has continued to enjoy a high reputation abroad. Other Australian medical schools have maintained a high tradition, and it is not surprising that the

Australian graduates are often referred to, when they go overseas, as among the best house surgeons in London.

The Council of the Victorian Branch of the B.M.A. sent a delegation to meet representatives of the Council of the University of Melbourne, and protested against the quota system for medical students. A request was made for an increase in the numbers admitted to the medical course. This happened in August, 1957. I was a member of the University Council Committee who heard the delegates of the B.M.A. This gives the lie to those misinformed laymen who accuse the organized medical profession of keeping a close preserve and favouring limitation of entry to the course.

However, the University of Melbourne is fixed in area, and its upper limit of students[1] is to be 12,000. If medicine has 200 in each year—that is 1200 in six years—it has 10% of the total student population. Bearing in mind the large number of courses now offering at the University compared with thirty years ago, it is reasonable to put a limit on the number of medical students.

The University of Melbourne, with its long tradition for medical training, is admirably equipped for developing teachers in science and medicine. It will naturally exert a benign influence on newer institutions, such as Monash University and those which come later.

A feature of modern tertiary education not generally realized is that the cream of the intelligent students is distributed over a larger number of faculties than heretofore. Atomic physics, law with its many avenues for interesting careers, arts and commerce, to say nothing of the many different courses in engineering, attract bright boys more than ever. Medicine has to be content with a smaller fraction of the upper crust of students. There may be more than one reason for this falling off in bright boys entering for medicine; one is the frustration of parents by the quota system. I believe that a pernicious later result of the quota system is now being experienced.

Among those who appear to be late in maturing intellectually are many who have a keen desire to be doctors. They have a sense of vocation. They may be sons of doctors, teachers, ministers or artisans brought up in good homes, and having a desire for a profession in which personal service is important. The quota system as it operates at present frequently excludes some of these boys and girls. It is to be noted that the calendar age of a student, or his showing at physics or chemistry, is not always a true indication of his potential as a doctor. There are living examples of this fact among doctors in Melbourne, some of whom are among our best clinical teachers.

Also, it is to be noted that, although in 1954 the quota system occasionally excluded a Commonwealth Scholarship holder, such is not now the case. The number of Commonwealth Scholarships is fixed, but the student population is growing. Last year 14 of the students who were selected to enter the medical course at the University of Melbourne could not proceed because they had not obtained 67% in the three best subjects, so they could not receive a Commonwealth Scholarship. Among these boys are high school students of better than average quality. They desire to do medicine, but for economic reasons they are diverted into industry, teaching, engineering and commerce by entering cadetships—a further illustration of the competition for good brains.

It has been suggested that an interview by a competent selection committee, such as operates in entrance to the Navy, should be added to the premedical examination, or an assessment of the results of matriculation. While this system is popular in some American medical schools and in London hospitals, it is not, in my opinion, suitable in this country. Mr. Zwar advocated such a system; but when he introduced the matter some years ago at the University of Melbourne it was not favoured. I do not see how it could be in a State-endowed university.

[1] See "The Growing Student Body", Melbourne University Press, 1959.

An aspect of the quota system which has been little appreciated in Melbourne is the fact that there is only one medical school in Victoria. There will soon be two. In countries like England, there are many—12 in London alone. If a young aspirant cannot enter one, he has the choice of applying for many others. The same holds for the United States and Canada. The latter has 15 medical schools.

This frustration of talent, moderate as it may be at adolescent level, but charged with possibly great potential for the future, is not a credit to our country. There are members of the Council—members of our Branch—whose sons have struggled valiantly to qualify for entry to a medical course, only to find that they were rather too low down the list to be allowed to enter.

It is no mean achievement to matriculate for the medical course. Can Victoria, can Australia, afford to turn down boys who may not make clever researchers, but who would make good doctors? I am all for the clever and the good doctor—a combination which is ideal. There is ample scope for the clever in advancing knowledge, in taking the posts of consultants, high-grade specialists, etc.; but there is ample room for the moderately clever, good doctor, who is and must remain the footslogger of the medical army, the first line of defence, the friend of the family, the repository of their confidence, the first associate on the road to recovery, or their dearest friend in the hour of departure. For these reasons we have welcomed many men from England who, while not holding our qualifications, nevertheless have that practical training which enables them to heal our sick.

I do not advocate the hurried methods of the Americans, necessary as they were a century ago when, pushing further west, they felt the need of doctors, lawyers and parsons and established colleges for the purpose. Abraham Flexner, in 1910, in his monumental report, condemned a lot of them and laid the foundations, for the excellent modern American medical schools.

On the other hand, Great Britain with her long history has handled this problem. Universities, except for Oxford and Cambridge and the Scottish foundations—St. Andrews, Edinburgh, Glasgow and Aberdeen—are of recent origin. So, medical men were more frequently diplomates of colleges or licentiates of the Society of Apothecaries than graduates of a university. In Melbourne, we commenced with a university. Its degree in medicine became respected. The dilemma, as I see it, is: shall we continue to rely only on additional registered doctors (many not degree holders) from abroad? Shall we seek the help of our Australian colleges to hold an examination for undergraduates, similar to the Conjoint Board in England? Or shall we try to encourage more bright and reasonably intelligent boys to do a degree course here and fight for facilities to that end?

I propose the last-mentioned. In my opinion, there is no reason why the University of Melbourne should not examine candidates for the degrees of M.B., B.S. (Melbourne) who have spent their preclinical years in a place other than the hallowed precincts of the Wilson Hall. In other words, I advocate multiple medical schools, under the University of Melbourne, *à la* London. Is London as bad as all that?

The appropriate authority might ask the hospitals—the Alfred Hospital, St. Vincent's Hospital and Prince Henry's Hospital—to submit proposals for medical schools. Government advisers at present continue to repeat that it cannot be done.

A medical school could be set up and function within a year, south of the Yarra, in the precincts of the Alfred Hospital. There is land, there is a hospital (the workshop of the medical student), there are institutes already formed for work in pathology and biochemistry. Near by, at Wesley College, just awaiting a taker, is a block of buildings which could accommodate medical students at a later date. I have looked into this matter. It is worth more than a patronizing and scathing glance. In fact, it was the subject of a very interesting report submitted by the Dean of the Faculty of Medicine, Professor S.

Sunderland. It is not a new idea. It was aired on the University Council three years ago by myself; but it was said by the Vice-Chancellor to be impracticable. Such a centre in Prahran could start with medicine and add other sciences as time and expanding needs demanded. The New England University was a college of the University of Sydney for many years. Canberra University College is affiliated with the University of Melbourne.

There are many examples of a federation of university colleges — notably the University of London. In New Zealand, the University of Otago is in Dunedin, but it has Colleges in Auckland, Wellington and Christchurch.

If the University of Melbourne did not wish to expand beyond its present campus, a separate college combined with a medical school could be established around the Alfred Hospital and Wesley College on lines similar to that of Tufts College, Boston. That medical school trains one-third of doctors in New England, U.S.A. We were glad indeed to welcome and sit at the feet of one of its distinguished professors here in Melbourne a few months ago. Such a college would develop, as Tufts has done, into a university in time.

If the Alfred Hospital was to ally itself with Monash University, Prince Henry's Hospital could become an independent and complete medical school. Footscray Hospital, and maybe Preston Hospital, could provide teaching material on the spot. This is not a new conception, and students at present visit several hospitals during their course. As in London, auxiliary hospitals provide excellent teaching material, and students go to the places where it is to be found.

Some of our leaders in the teaching field would have the patients brought to the central teaching hospital for demonstration purposes. This does not work out in practice, as is shown by the difficulties in providing certain clinical material in the general hospitals since the Peter MacCallum Institute began to attract the cancer patients.

The outer ring of hospitals which are functioning now, and those planned for the near future, will supply additional teaching facilities in the clinical field. There is no valid reason for a bottleneck here. Very wisely, honorary staffs have been chosen by a medical committee of the Hospitals and Charities Commission, with teaching in mind. Some of those hospitals could, if need be, add to teaching facilities now.

Another suggestion, which could be considered by a sympathetic and interested body, is the establishment of a medical school in the area of the Kew Mental Hospital. Visitors to this city often ask what is that dominating building on the Melbourne skyline. That delightful setting, close to the city and yet surrounded by large areas of parklands, surely is a lovely site for an institution of higher learning. A medical school covering the preclinical subjects could readily be set up there now in areas not at present frequented by the inmates of the asylum. Across the river is an area of 42 acres—Fairfield Hospital.

As the chairman of the Board of that hospital, I realize that its function is to provide accommodation for epidemic and fever patients; but I also know that it is capable of being developed into a fine medical institute for teaching and research. Perhaps our grandchildren will smile at our lack of vision, in two senses of the word. A chair of public health could be based on such an institute.

As the medical school developed, there could be added the other schools of learning, until finally it became a great cultural centre, more beautiful in its surroundings, capable of greater expansion than the University of Melbourne. By that time the mental hospital would have been removed to a more suitable area.

In the first half of the last century, the budding practitioner of medicine was introduced to his art by acting as an apprentice to the local apothecary. He performed his menial duties and "picked up" a certain amount of knowledge. He often went on to a hospital for a time—hence the term "walking the hospitals". He applied for a licence to practise, and underwent a test of his professional knowledge. The Society of Apothecaries performed a great service in those quite recent times. At least he saw some of the more sordid aspects of his future professional life at an early age. Even as recently as fifty years ago, it was customary for medical students in Melbourne to commence hospital work in their second year. The apprenticeship system had its points. It is of interest that of recent years a period, short enough—a fortnight in the later years of the medical course—is devoted to work with an accredited general practitioner.

Now that a College of General Practitioners is active, it is to be hoped that representation of the 80% of practising doctors will be found on faculties of medicine and other teaching bodies. The brunt of the training of doctors in the preclinical and clinical years will, however, have to be borne by professors, lecturers and honorary physicians and surgeons in the approved teaching schools as part of or affiliated with universities.

There are now over 200 clinical teachers, including assistants, in the medical school of the University of Melbourne. That number will soon be doubled, so there is no lack of opportunity for those practising doctors who wish to pass on their knowledge to the coming generation.

There has been some talk recently of establishing a medical school in which all the clinical training would be done by a group of professors and a full-time teaching staff. All beds in the university hospital would be under the charge of the professors, and in fact the university hospital would be governed by the University Council. It would be a clinical department of the Faculty of Medicine, a workshop or *atelier* such as those found in engineering and architectural faculties. This is not a new conception, but actually operates in some universities abroad—notably the Billings Hospital, Chicago, U.S.A., part of the University Clinics of that city. Melbourne could well try an experiment of that kind, provided the hospital was small—200 to 600 beds or so—and time would determine whether it was worth putting all the eggs in one basket. It is of interest that such a plan is proposed for a hospital on the campus of Monash University. Private patients attend those hospitals abroad, and willingly submit to students' examination. The scheme has disadvantages, in that there is no place for the honorary medical officer, the practising teacher.

Although the best teachers are born as such, many acquire ability to teach, and it is good for their own advancement in their art that they should continually impart knowledge. That is the pattern we should be wise to follow. On the other hand, I think we can afford to experiment with a limited university hospital, and Monash University will ultimately provide exactly this pattern.

The third suggestion is one that may appeal to those who have found the Melbourne M.B., B.S. course rather tiresome, and who have obtained a licensing diploma in Great Britain or elsewhere. It is not to be lightly put aside. In fact, we may be well advised to set up a system whereby the practical doctor may obtain his qualification through college diplomas. We do it now in a round-about way—let us not be hypocritical about it.

An examining body operates at present. It is charged with the task of determining whether New Australian graduates of overseas (European) universities or colleges are fit to be registered in Victoria. It conducts examinations under the University of Melbourne. Is there any reason why such a body could not be expanded, to include the examination of candidates for registration who do not hold the M.B., B.S. (Melbourne), but who produce evidence of good, sound practical training at the Melbourne, Monash or other medical schools which are set up?

Standards may be relaxed a little. They are now, and have been for a century past in Victoria—for example, the registration of overseas licentiates and diplomates.

There are other professions beside medicine in which the numbers graduating from the university are insufficient to meet the needs of the people, here and in other States of Australia. What happens? A dilution by registered technicians. Schools of osteopathy, chiropraxy and

optometry will soon compete with our medical schools. The public will be served, despite Hospital and Charities Commission, medical boards and university faculties.

It is at this point that a responsible body such as the British Medical Association should make its voice heard. There is some precedent for this in trades and professions in the past. The Branches of the B.M.A. are comparable to the ancient guilds of London. The latter took a lively interest in the training of recruits, and from them rose many of the licensing bodies (including medicine) to which I have previously referred.

If such a committee as I suggest was formed, it could be advisory only; it would have no executive power. But advice is just the very thing that is required in high places today. Leaders at political and university level seek it. The parent professional body should give it.

There have been forward-looking Australians of recent years who have grappled with this problem of higher education. Dr. Merrilles has ideas of a University of the Riverina. I think he is to be commended for his efforts in this regard. His has been a voice crying in the wilderness. There is an obvious need for a higher educational institution (including medicine) at Albury, Wagga and some other suitable place in that area; but the State boundaries and the competition for Commonwealth money render it easier for Federal politicians to spend lavishly on the universities of the capital, Canberra, although these richly-endowed institutions are unlikely to contribute much to the training of many of the best brains of Australia at undergraduate level. It is stated in high places that the next university in Victoria will be located in the country, not in the metropolis. All the more reason to develop more medical schools in Melbourne, where clinical and preclinical material is in greater abundance.

For these and many other reasons, I suggest to you, Mr. President, that this Victorian Branch of the B.M.A. form a standing committee on undergraduate medical education. It is not the first time that the B.M.A. in Australia has taken a lead in such matters. After World War I, the Melbourne Permanent Post-Graduate Committee was formed by this Branch. It is now (as the Melbourne Medical Post-Graduate Committee) a flourishing section of the Australian Post-Graduate Federation in Medicine.

The British Medical Association Congress in Dunedin, New Zealand, in 1927, was the venue for the formation of the Royal Australasian College of Surgeons. The scientific, teaching and lecturing activities of the Branch have always been of great importance. If this body—the British Medical Association—does not deal with this matter, what body does? ". . . in the multitude of counsellors there is safety." (Proverbs, 11: 14.)

For us, as medical men and women, a special responsibility remains. If we had such an advisory body as that suggested, it could in time build up a fund, by donation legacies from our members; and from such a fund appropriations could be made from time to time to assist in furthering the aims of the general body of the profession in the matter of undergraduate medical education. Would the Royal Australasian Colleges be interested in providing examinations and issuing a diploma, as is done in Great Britain by the older established Royal Colleges?

As this paper is addressed to the Victorian Branch of the B.M.A., and as only Victorian difficulties are discussed, it is presumptuous to go further beyond local problems and local solutions. Besides, education is a State matter, and New Zealand is not our concern.

From the Commonwealth point of view, it is politically important at this time that we open our academic doors to Asian students. This is eminently desirable, and should have been done years ago. After all, Australia is an outpost of European culture in the southern hemisphere, and it is not to our credit that it was necessary for Japan to declare its intention of creating a greater East Asian Co-Prosperity Sphere in the last war before we woke up to the fact that we were transplanted Englishmen, Scotsmen and Irishmen with a special mission to perform. The current transfusion of European blood makes our responsibility more pressing. We Australians must now share the "White Man's Burden".

On the other hand, it is of interest to note that the Commonwealth Government has done little to assist the States in the matter of providing facilities for Asian students as well as keeping up the regular needs of the Australian community. There has been loose thinking, bad thinking, or rather no thinking at all on these matters at Federal level. The recent action of the Commonwealth Government in setting up a Universities Commission is a belated step in the right direction. Perhaps at the seat of power and financial affluence, Canberra, it will now be realized that the only real treasure that moth and rust do not corrupt is the collective brains of the Australians who live in States.

Finally, this paper is designed to arouse anew the interest of the practising profession in its obligations under the second paragraph of the Hippocratic oath. We were medical students once, we are students of medicine all our days. When our material interests are at stake, we unite as one man, we exert pressure through our State Councils and Federal Council, and so we should. May we never be divided; that way is to be dominated by bureaucrats and have imposed upon us a control from without. But unless we show the same interest in our professional work in the educational and scientific field as we do in economic matters, we are no longer worthy to hold the high place in our society which our predecessors have earned for us.

We should be searching for talent among the boys and girls of our schools, and encouraging these young people in their aspirations. We should exert our personal and collective influence to remove this blot of restriction from our educational escutcheon. Thus shall we serve our generation in the tradition of Sir George Adlington Syme.

THE EDUCATION OF UNDERGRADUATES IN CHILD HEALTH AND DISEASE IN THE UNIVERSITY OF WESTERN AUSTRALIA.[1]

By W. B. MACDONALD,
Professor of Child Health, University of Western Australia, Perth.

HEALTH is considered by many to be the birthright of every young Australian. In a land where climate and natural resources have helped to produce a nation of world-ranking sportsmen, the spectre of famine or disease is remote and can be faced if or when it appears. However, in accepting healthy children as their rightful heritage, Australians have come to regard the study of child health with indifference. Unfortunately this attitude is not confined to the lay public; it is widely found amongst medical graduates, and worse still, amongst some medical teachers. The unpalatable fact is all too true, that many intelligent and inquiring parents know more about child health than their medical advisers, and those same medical advisers run the risk of appearing foolish in front of parents. This reflects badly on the profession as a whole. It is only recently that the Duke of Edinburgh, speaking as a layman, censured the medical profession in Canada for its preoccupation with disease rather than the preservation of health in early life.

Australia may lead the world in some respects, but in child health education it barely escapes being classified as a backward nation. Until very recently the curricula in the medical schools of Australian universities included next to nothing on the study of the normal child. It is tempting to blame the rigid recommendations of the General Medical Council for this, and in some respects this may be justified; but it is probably not

[1] Read at a pædiatric course arranged by the New Zealand Pædiatric Society and Wellington Hospital Post-Graduate Committee, Wellington, September 29 to October 2, 1959.

unfair to state that the blame must partly be accepted by those who have framed the curricula in our medical schools without regard for the normal child and its requirements. Australian medical graduates who appreciate the wide range and the shifting standards of normality in children have derived that appreciation from their own understanding and experiences, from processes of trial and error and extrapolation from sick children, rather than from instruction on normal children during their medical courses. The framing of medical curricula by those whose professional interest and whose livelihoods have depended largely on the study of adults has contributed to an intellectual stasis where the study of childhood, with its exciting, ever-changing, dynamic preparation for adult life, has been considered as a specialty, to be grouped with the study of eyes, feet, ears, noses and throats and the like.

To anyone at all research-minded, it must be patently clear that investigations into the pathogenesis of adult illnesses must not be limited by the fourteen-year age barrier, and that a large number of physical and psychological maladies have their origins in childhood, in infancy or even in utero. It must be equally obvious that a knowledge of standards of normality in structure and function, growth and development in the young age period would be of considerable assistance in identifying the abnormal. These principles are elementary; but have not been recognized by more than a handful of medical educators who have been able to escape from their nosological strait-jackets. That one can still hear the statement "pædiatrics is just adult medicine with a bit of infant feeding chucked in" reflects, not only the speaker's ignorance of fundamentals, but on the poor teaching of his medical school.

In the post-war period, medical schools throughout the world have taken measures to remedy the deficiencies in their curricula on the study of normal children. The attempts that have been made in Australia either have been stillborn or have been obstructed during their birth. The most successful experiment in the clinical field to date has been that conducted by the Institute of Child Health in the University of Sydney (Clements, 1957), in which case studies have been conducted on normal children and those with minor behaviour disturbances attending kindergarten or pre-school centres.

Late in 1956, a Study Group consisting of professors of pædiatrics from every region of the world excluding Australasia, but significantly including Australasia's near neighbours, met in Stockholm under the ægis of the World Health Organization for the purpose of deliberating on pædiatric education. The group put forward recommendations which were published as a W.H.O. technical report in the following year. The group recognized the diversity of requirements for child health in different parts of the world, and the consequent modifications of the general blueprint for pædiatric education which might be necessary. The report nevertheless is a first-class document, the result of the accumulated experience of some of the world's best pædiatric educators. In the year in which the report was published, the General Medical Council of the United Kingdom announced that it was prepared to make its recommendations to medical schools in the British Commonwealth more elastic, and thus permit a more adventurous approach to the study of medicine. This concession to medical education and the publication of the W.H.O. report coincided with the commencement of teaching in the newly established Medical School of the University of Western Australia, and preceded by one year teaching in pædiatrics. These happy coincidences, and the cooperation of other departments in the faculty, permitted the construction of a curriculum in child health and disease which closely conformed to the recommendations of the W.H.O. Study Group. The teaching programme, if not complete in detail, is now on a firm foundation within a year of its inauguration. That this has been accomplished smoothly within such a short time has been largely due to good fortune, but is also due to the vigour and enthusiasm of a new medical school.

The general planning of the school and the curriculum have been described in some detail (Sinclair, 1958; King, 1958), and this paper will be confined to pædiatric teaching, as far as is possible within a teaching programme in which the keystone is coordination and cooperation of departments.

THE TEACHING PROGRAMME.

During the first year of his course the student takes physics, chemistry and biology, and attends a short course of lectures on "The Foundation of Medicine", an historical survey of the history and philosophy of medicine.

In the second year, anatomy, physiology and biochemistry are integrated, to form a course in human structure and function which continues throughout the year. One of two examination papers in the subject requires a knowledge of all three component disciplines in order to answer each question.

The study of topographical anatomy is commenced in the second year of the course and continues until the end of the second term of the third year. The study of more advanced physiology and biochemistry continues throughout the third year.

Teaching in Child Health.

Teaching in child health commences in the third year of the course and is spread over three terms. Standards of normality in the early years of life become part of the student's early training, instead of supplementary training in the fifth year of the course. This method of instruction avoids the need for temporary adjustments to be made to adult standards for the immediate purpose of studying diseases of children, and is the logical position in the curriculum for the study of childhood to commence.

Third Year.

First Term.—At the end of first term, when students are concluding their instruction in anatomy and have received from their preclinical teachers instruction on the anatomy and physiology of growth, two lectures are given in the anatomy school by a member of the Department of Child Health. The content of these two lectures includes the following material:

1. *Growth in childhood—variations within and between age* groups, as shown by anthropometric charts for Australian children; somatypes; Wetzel grid; the physiology of growth; *nutritional and endocrine factors; peaks and plateaus of* growth related to appetite and food requirements.

2. A systematic comparison of anatomical and physiological *criteria of normality from infancy to adolescence, dealing* with the cardio-vascular, respiratory, alimentary, reticulo-endothelial and hæmatopoetic systems, and the body fluids.

3. A brief account of the entirely different mode of examination of the nervous system in small children, *followed by an introductory film on "Development in Child*hood" to serve as a bridge to the second-term programme conducted by the Department of Psychology.

Second Term.—In the second term, a course of 12 lectures on medical psychology is given by the Department of Psychology. The initial four lectures of this course are concerned with behaviour patterns and adjustment in infants, pre-school children, children of school age and adolescents. Students observe children of different age groups through an observation screen. Later, lectures on "Principles of Psychology" also include examples in the young age group. The second-term lectures on "Development in Infancy and Childhood" naturally follow those on growth given during the first term.

During second term, the Department of Child Health takes part in a series of lecture demonstrations and tutorials which introduce third-year students to clinical medicine. Emphasis is placed on structure and function with clinical illustrations. Disease states are avoided as much as possible, but sick children are sometimes used to exemplify disordered physiology.

The initial introductory talk followed by demonstrations in the out-patient department at the Royal Perth

Hospital on "Why a Patient Consults a Doctor", is followed by an introductory talk and equivalent demonstrations at the Princess Margaret Hospital for Children on "Why a Mother Brings her Child to See a Doctor". After these demonstrations to the whole group, the introduction to clinical medicine is approached systematically. Childhood is considered not as a specialty, but as a growing phase of human life, and two of the eight tutorial groups of six students each attend the Princess Margaret Hospital weekly, alternating with other groups. At both the Royal Perth Hospital and the Princess Margaret Hospital the same system is covered simultaneously—for example, the respiratory system, the cardiovascular system, the locomotor system, the central nervous system.

Third Term.—Weekly symposia are held on various topics in which anatomy and physiology figure prominently. Preclinical, paraclinical and clinical departments cooperate in forming the panels in these symposia which are followed by clinical illustrations. The Department of Child Health figures in this series along with other Departments. The subjects for discussion vary widely, and may change from year to year. Œdema, cerebrospinal fluid and hydrocephalus, the control of micturition, the biochemical effects of surgery and anæsthesia, mechanical disorders of heart action, dyspnœa, are typical examples.

Comment.—The end result of this introductory course in clinical medicine, as far as the young age group is concerned, is that students are taught about the changing standards of structure and function, growth and development in the normal infant and child before they study disease states. This promotes a perspective in the study of human life and an appreciation of the dynamic nature of medicine from conception to death. Some time in second term, the witnessing of a normal birth, with the realization that life has existed for a considerable time prior to this, emphasizes this fact. It is planned that each student shall follow the progress of the baby whose birth he has witnessed for the remaining three years of his course. This will be done with the cooperation of the family doctor, and will serve to accentuate the fact that the child is part of a family, is influenced by social and environmental factors existing in the family, and in health and disease must be considered in this context. Case notes will be kept, and a report for which a prize will be awarded will be completed at the end of three years. By these means it is hoped to encourage an investigatory approach to medicine, and an appreciation of the need to study the natural history of disease at its commencement rather than retrospectively in its advanced state or even from the post-mortem table.

Fifth Year.

The study of diseases of children commences in the fifth year of the course. Since their introductory study of the normal infant and child in third year, the students have studied pathology and microbiology and adult medicine and surgery, and have kept in contact with the family and children by means of their case studies and through the medium of seminars in psychological medicine held at intervals during the fourth year.

The course in children's diseases is 14 weeks in duration, and is repeated three times during the year. During each course, each student spends two weeks attached to a family practitioner, so that the total time spent at the Princess Margaret Hospital is 12 weeks. At least two weeks are spent in residence, with the option of a longer period if accommodation is available. Whilst the number of students each term is small, some have spent four to six weeks in residence.

Lectures.—There is a short course of lectures given each term on subjects peculiar to childhood which are unlikely to be incorporated within the systematic course of lectures in medicine or surgery given at the Medical School throughout the year. The content of the course may alter from time to time, but it is hoped to keep the number of lectures small. Particular attention is given to preventive pædiatrics in this course, typical lecture subjects being "Prevention of Accidents", "Control of Infections", "Dental Health".

Clinical Instruction.—Clinical instruction in the fifth year is given as follows.

General Medicine.—Each student attends each week for two periods of two hours at the bedside for clinical instruction, and for either one or two periods of two or three hours in the consulting room. Students are expected to act as clinical clerks for their ward patients, and suitable children are assigned to them. However, certain factors make this more difficult to arrange than in adult wards. There is a much more rapid turnover in children's hospitals than in adult hospitals, and if a student is not present at the time when a child is admitted to hospital, he may lose the opportunity of taking a personal history. The system of unrestricted visiting in children's hospitals and the long period of residence spent by some students partly compensate for this. In the out-patient department, the number of patients attending teaching sessions is kept as small as possible, and all patients are referred from practitioners or from the general clinic. The consultative nature of the clinic is preserved to give students experience in interviewing, unhurried history taking and examination, and adequate explanations to parents. About half the patients have psychogenic disturbances, which makes this principle all the more necessary. The more practical apprenticeship, similar to that of the family practitioner's surgery, is experienced in the casualty department and the general clinic during the students' period in residence.

General Surgery.—Each student attends 14 sessions on surgery in childhood. One of the surgeons on the staff supervises the surgical teaching programme under the general direction of the Professor of Surgery and the Professor of Child Health. The first two teaching sessions are given over to two lectures, the first on "The Young Child Approaching Surgery—Physiological and Psychological Problems", given by the Professor of Child Health. It is hoped to supplement this lecture each term with a film "Going to Hospital with Mother" (James Robertson). The second lecture, on "The Young Child and the Anæsthetist—Physiological and Psychological Factors, Pre-Operative Sedation and Anæsthesia", is given by an anæsthetist. The remaining 12 sessions are divided into alternate clinical instruction in the out-patient department and clinical demonstrations in the wards. During their period in residence, students are encouraged to assist at major surgical operations and perform minor surgery under supervision in the casualty department.

Psychiatry and Social Medicine.—During their course at the Princess Margaret Hospital, students attend the Child Guidance Clinic close by the hospital for instruction in the clinical diagnosis and management of psychological disorders, behaviour disturbances and psychoses in childhood, and in addition make a brief acquaintance with the more commonly used psychometric tests. The total number of attendances is six, each of two hours. The psychiatrists at the Child Guidance Clinic are attached to the Princess Margaret Hospital as visiting psychiatrists, and give additional instruction to students as opportunity arises. The instruction at the Child Guidance Clinic is part of a comprehensive series of extramural visits, designed to lead the student progressively through normal infancy and childhood to the physically handicapped child, the psychologically disturbed and delinquent child and the mentally defective child, with demonstrations in the management, education and habilitation of each. The University Department of Psychology and the Government Departments of Infant Health, Child Welfare and Mental Health cooperate with the Department of Child Health in organizing this programme. Instruction at infant health clinics is given by a combined medical-infant health team to both medical students and infant health trainee nurses, with the object of avoiding the differences of opinion which are so common at present in medical practice. In order to provide for the peculiar geographic

and ethnological needs of Western Australia, instruction is given at both a model urban infant health centre and one situated in a native settlement, where entirely different social, nutritional and public health problems exist.

Medical and Surgical Specialties.—Clinical demonstrations are given in cardiology, dermatology, ophthalmology, oto-rhino-laryngology and plastic surgery. Orthopædic surgery is included in the teaching programme to a greater extent than some other surgical specialties. Students attend approximately six orthopædic clinics during their course on diseases of children.

Radiology.—Radiology is taught in conjunction with clinical medicine, instruction preceding a clinical ward round of the University team once per week. Selected radiographs are presented by either a houseman or a student, and discussions involve the whole group—physicians, radiologist and resident staff.

Case Conferences.—Case conferences are held once a week during the last half of the course, and with the present small clinical groups combine the functions of tutorial and discussion groups. Suitable cases are chosen one week in advance, and sources of reference are indicated to the two students who have been selected. One student presents the medical features of the case and a general description of the pathogenesis, pathology, clinical features and treatment of the disease. His partner investigates and describes social and psychological factors. The standard of presentations has been very high, and students have shown commendable enthusiasm. The conferences are open to all medical and paramedical members of the hospital staff, and post-presentation discussions are productive. This is a good and well-liked form of instruction. When groups become large, it will be necessary to include tutorials in the teaching programme; but at present with groups of five students only, the weekly case presentations serve this purpose.

Medical Apprenticeship.—At all times, but particularly during their period of residency, students are expected and encouraged to acquaint themselves with practical procedures in medicine, surgery, clinical pathology and nursing. In the casualty department they interview parents and examine children under the supervision of the Registrar, perform minor surgery, take simple radiographs, examine urine and blood, assist with major surgery and help nurse children whom they may have followed from the casualty department and who have been allotted to them.

Neonatal Pædiatrics.—Students are instructed in the examination and care of neonates for at least six sessions of one hour each during their course in children's medicine. Instruction is given at the King Edward Memorial Hospital for Women, where the members of the University Department of Child Health are ex-officio honorary pædiatricians. The Department of Obstetrics cooperates closely in the instruction on the care of the new-born. During their obstetric clerkship, students receive further instruction on the care of new-born infants.

Infectious Diseases.—During their pædiatric course, students attend the Infectious Diseases Hospital for seven clinical demonstrations.

Social and Psychological Medicine.—Whilst attending the Princess Margaret Hospital, students spend half a day per week at the University Medical Centre, where seminars on public health, social medicine and psychological medicine are held. These include the care of all age groups. When the teaching programme gains momentum, and students arriving in the fifth year of their course have already studied behaviour patterns in normal children, case studies as held at present in the University of Sydney (Clements, 1957) will be instituted with the cooperation of the University Department of Psychology and the University pre-school centre.

Clinical Pathology.—Whilst engaged in their pædiatric course, students attend the Royal Perth Hospital weekly for clinico-pathological conferences and receive demonstrations in clinical pathology from the pathologists at the Princess Margaret Hospital.

Research.—Students are encouraged, but not obliged, to write short theses on subjects which may have engaged their attention during the pædiatric course. Those which have been submitted to date have been of particularly high standard, and have indicated that some students are orientated towards research.

Genetics.—A course of 12 lectures in clinical genetics given during the fifth year will acquaint students with heredo-familial disorders, which are assuming an increasingly important role in the study of diseases of children.

Sixth Year.

Final-year students attend the Princess Margaret Hospital one afternoon per week for clinical instruction in the diagnosis and management of sick children. In addition, final-year students enter the hospital for a further two weeks of residence. During this period they are given added responsibilities, and usually attach themselves as personal assistant to a registrar, who acts as preceptor.

The Final Examination.

No separate written examination in child health and disease will be held. Childhood is one phase of human life, and a specialty only in so far as special techniques and skills have to be acquired to deal with the very young; yet because of their special needs children should not be physically grouped with adults.

Examinations in child health and disease will be distributed amongst the three major clinical disciplines as defined by the General Medical Council.

Two questions in the written examination in medicine will deal in whole or in part with the young age group, and it is expected that questions of a more general nature will also require a knowledge of childhood, especially if they involve preventive medicine. The same may apply to the examination in surgery.

Clinical examination in children's medicine will be held separately for practical reasons. If possible, a member of the Department of Child Health will attend the clinical examinations in children's surgery, for the purpose of ascertaining the candidate's knowledge of physiological and psychological factors in pre-operative and post-operative management.

The natural position for the study and examination of the new-born is at the obstetrics hospital, and it is there that candidates will be examined on problems of the neonate. Although this could be done at the Princess Margaret Hospital, it is important to impress on the student that the study of obstetrics includes the study of the content of the uterus both before and after birth, and this can be done best at the maternity hospital. Each candidate will be asked questions on the new-born by the representative of the Department of Child Health as part of the clinical examination in obstetrics.

The examinations relating to children will be considered as an indissociable part of the three disciplines of medicine, surgery and obstetrics, and no provision will be made for separate "repeat" examinations in the childhood component of these three disciplines.

No external examiner in child health and disease will be appointed regularly; but from time to time, as the faculty thinks fit, the external examiner in medicine may be a children's physician, probably a professor of child health from another Australian university.

DISCUSSION.

The W.H.O. report on pædiatric education states that:

> Medical Education has as a basic objective the preparation of good general physicians able to serve the community as well as the individual. The competent practitioner must recognize and be responsive to the social needs and health demands of the community and country in which he lives.

With the rapid progress in medicine, improved techniques of diagnosis, advances in therapy, the changing epidemiological pattern, the substitution of some diseases for others and an awakening to the importance of social and psychological factors in disease, it has become obvious that to attain these basic objectives, standards of medical education must change. For many reasons in the past, the study of children in health and disease has not received the prominence in the curricula of medical schools which one would consider due to an age group comprising 30% of the population. With advances in medical knowledge and with a greater understanding of the pathogenesis and natural history of disease, more attention is being paid to the early features of abnormality and preventive medicine. It naturally follows that to study early disease and its prevention one must study the young, and this requires a knowledge of the shifting standards of normality in this age group. If these fundamentals are not accepted, the study of medicine loses its claim to adventure and becomes no longer an intellectual pursuit. Medical graduates can no longer cloak themselves in the mysticism of their professional training. Newspapers, magazines, digests, radio and now television have turned the spotlight on the profession, and ignorance can no longer be concealed. In no field is the medical graduate more exposed to critical appraisal than in that of *"puériculture"* or the study of the normal child, and in fewer fields is he more ignorant. When one deals with groups and associations of intelligent parents, this fact emerges with embarrassing clarity. Other countries in the world, according to their respective needs, have attempted to remedy these deficiencies in their medical curricula; but only now is Australia rousing itself from its indifference and establishing departments of child health in its universities.

By combination of fortunate events, the Department of Child Health in the University of Western Australia has been able to follow the precepts of a widely representative international Study Group, and is probably one of the first teaching units in the world to be able to do so after publication of the recommendations. The success of the programme will be determined by the attitude of future graduates of the University of Western Australia to the young in their practices and in the community.

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YESTERDAY, TODAY AND TOMORROW.[1]

By F. W. R. LUKIN,
Brisbane.

I AM especially honoured in being asked to deliver this memorial lecture, because I am conscious that it was not my ability but my friendship for Dr. Meyers which has influenced the choice. It is from the acknowledgement of that friendship that the honour comes.

We are in a place which, in itself, will always be a memorial to those who were responsible for its foundation. While bricks and mortar do not last forever, they are a token to future generations of the successful outcome crowning years of striving on their behalf. Dr. Meyers was largely instrumental in the establishment of this medical school in Queensland. It was brought into being not so much by a desire of many to learn, but by the urge of a few to teach; of these, Dr. Meyers was an outstanding example. One of his notable characteristics was a very ardent desire to increase knowledge so as to improve service to those who were ill. It was in the pursuit of this ideal that he devoted much of his precious time to teaching anatomy to dental students and others in a small, ill-equipped building in William Street. From there to the establishment of a school of anatomy within the University of Queensland and a school of medicine was a logical step, within the ability of those who were not only idealists but practical organizers. This is now past history in the days of yesterday; but in those past days Dr. Meyers was inspired by the need to provide for tomorrow, and so it is appropriate that we should honour his memory today.

His success in the academic side resulted in his becoming a lecturer in surgical anatomy and operative surgery within the Department of Surgery, and he continued to play a very active part in the development of the School of Medicine and became the Dean of the Faculty in 1942. This post he filled with distinction, despite his own personal problem of poor health. He also accepted during this period the responsibility of the Department of Social and Tropical Medicine. This was in keeping with his desire to increase knowledge for its own sake, and for the resulting benefit such knowledge would bring to the people of this State.

In addition to this, he displayed very early in his surgical career a spirit of progress. He accepted as a challenge the limitation of surgery imposed by prevailing conditions, and was constantly endeavouring to widen the successful application of the surgical art. This meant very careful attention to detail and a search for new techniques and methods. It also called for a very thorough knowledge of anatomy, of which he was fortunately possessed. This, however, was not the only requirement. More accurate diagnosis required the promotion of those diagnostic aids which surgeons now regard almost as a birthright, but which were then only beginning to show their value. Recovery after operation depended on many factors, the causes of which were quite unknown, and a study of these factors was of the greatest importance.

In all these things Dr. Meyers took a great interest, and to all activities which had for their objective the attainment of better surgical results he gave his willing cooperation. Every resident medical officer who became Dr. Meyers's resident was imbued with his enthusiasm for progress in the healing art, and owes much of his subsequent success to his example and teaching. A review of the hospital records of 1923, when he was junior surgeon, shows that his surgical range was wide, embracing as it did procedures now confined to specialist departments—namely, gynæcology, orthopædics, urology, and dental and plastic surgery.

To appreciate the difficulties at this time, it is necessary only to consider what facilities were lacking that we regard today as essentials. It was common in those days for surgeons to be still involved in the sleep-destroying activity of general practice. The anæsthetic art was then just emerging from the chloroform era to the rag-and-bottle stage of ether. As the late Dr. Charles Thelander used to say: "You may woo them to sleep with chloroform or bludgeon them into unconsciousness with ether." Supervision by thoroughly experienced anæsthetists, as is practised today in modern hospitals, was at this stage quite unknown. Surgeons had to be content to operate under the conditions of anæsthetic fluctuation for which an inexperienced anæsthetist could hardly be held responsible.

It was in this era that the definition of an anæsthetist had some justification—a doctor who sits half asleep at the head of a patient half awake. One wonders now how a block dissection of glands of the neck could have been so neatly and quickly done, with the added aseptic precautions made necessary by the unsterile mask of the

[1] The E. S. Meyers Memorial Lecture, delivered on July 17, 1959, at a joint meeting of the University of Queensland Medical Society and the Queensland Branch of the British Medical Association at Brisbane.

anæsthetist; but neatly and quickly were they performed by Dr. Meyers, and many a patient whose growth would have overwhelmed him lived to bless the skill of this surgeon.

Pathological services were unknown as a part of the hospital, and investigations were undertaken by the Department of Health. Blood counts could be done, if urgently required, by the resident medical officer in charge of the patient, or one of his friendly colleagues.

Broadly speaking, the range of useful drugs was entirely limited. Practically all those used were of doubtful value, except for opium and belladonna and their derivatives. There were few drugs which successfully combated the disease itself. No progress of any note had been made in the treatment of pneumonia, diabetes and pernicious anæmia for hundreds of years. Except for the cold-water bath treatment introduced by Dr. Hare at the Brisbane General Hospital, typhoid fever was relatively undeterred.

It could be remarked that in those days they knew little but they knew it well, and their powers of observation and deduction stood them in good stead. These attainments are in desperate need of preservation. It was the careful attention to surgical procedures and to aseptic techniques and gentle handling which resulted in wounds' healing by first intention.

In this age of antibiotics it is hard to realize that at that time neither surgery nor medicine knew of any agent which was fatal to germs. Prevention of wound infection was of paramount importance, and it still is.

Replacement of blood loss by transfusion was being advocated, but was considered a very risky procedure. The justice of this remark can be assessed from the fact that at that date only four blood groups were recognized. I think it is correct to state that the first blood transfusion was given at the Brisbane General Hospital in 1923 to a patient who had a ruptured spleen. Intravenous therapy was not widely practised, because of the risks of infection and of frequent rigors which followed, even when the sterility of the fluid was assured, the pyrogenic factors being then unrecognized.

Nor was there knowledge of the intracellular and extracellular body chemistry. As a result of this, the true nature of post-operative shock and fluid-balance upset was little understood. When wound infection occurred, it was apt to be a long time in existence, and apart from encouraging the natural resistance of the body and facilitating the discharge of purulent fluid, active treatment to destroy the infecting organism was unknown.

Radiological assistance was becoming more widely sought, and gradual improvement in the diagnosis of chest and internal conditions was taking place. X-ray treatment was not a separate entity, and radium was in its infancy. To the development of cooperation between the surgeon and the radiotherapist, which now produces such favourable results, Dr. Meyers lent his unqualified support.

These were the conditions under which he started practice, and which failed to dim his enthusiasm.

Despite his other activities, Dr. Meyers was greatly interested in the maintenance of the dignity, position and independent spirit of the medical profession. He gave freely of his time in attending to these matters through the medium of British Medical Association activities. He served on innumerable subcommittees, and for years on the Council of the Branch, and as president in 1932.

Lest you should think I paint too glowing a picture, let it be stated that my friend had his failings just as you and I. The most serious of these, as he readily admitted, was that he was a poor golfer; but he compensated for this by being an attractive golfing companion. In this sphere of activity he was always striving to increase his skill.

Over the course of years great developments have taken place, and now today we are reaping the benefit of the enthusiasts of the past.

Pneumonia is regarded as a matter for regret, but not for alarm, often not even for skilled nursing. Pernicious anæmia can be accepted as a compatible acquaintance. Diabetic patients seldom die of the disease or of starvation; these, in years gone by, were the alternatives which faced them. Typhoid fever is such a rare disease that when a patient suffering from it is admitted to hospital it is often not recognized as such purely from its clinical features. Tuberculosis has been subdued by the combined attack of early diagnosis, mass X-ray examination and adequate treatment by the newer drugs to which it is responsive. Some credit must also be given to legislation aimed at its early notification and at provision of hospital facilities for the sufferers, as well as some economic relief for their families. The success of the antituberculosis campaign is such that hospital accommodation being provided for these patients is likely to be in excess of requirements.

The art of anæsthesia has progresed in an amazing manner, and with new understanding of physiology patients can be kept under perfectly safe anæsthesia for periods of time which permit surgery of an extent previously undreamed of. Nor do the patients wake to that dreadful feeling of nausea, the fear of which was often the deciding factor in refusal of surgical help.

Allied to this, the intravenous therapists can now produce wonders in preventing the previously disastrous complications of radical surgery. The development of a blood transfusion service — made State-wide by air transport facilities — has saved the lives of innumerable patients.

These things have made possible surgery on vital organs which were previously thought to be for ever beyond the realms of surgical assistance. Lung and heart operations are now common procedures. By these developments the range of surgical benefit has been widened, as Dr. Meyers always hoped it would be. It is pleasing to think that in his time he clearly saw his dreams being fulfilled, and he must have known that it was the result of work by men who had in common with him the spirit of progress.

These changes have resulted in a more definite trend towards specialization in the practice of medicine. That this is a forward step there can be no doubt; but it has its drawbacks. After all, the patient is an individual with a background, and this factor is often important in his problem. He is concerned not only with the cure of his medical conditions, but also with the other factors requiring his attention for the maintenance of his family's welfare. His complete and successful treatment requires more than an operation, and specialization undoubtedly narrows the assessment of the problem and tends to overlook the humanitarian aspect.

There is a body of opinion which considers that a period of general practice is a *sine qua non* for physicians and surgeons. I commend this to your consideration.

There are other unwelcome changes which have taken place in the practice of our chosen profession. Probably the worst of these is political intrusion into the field of medicine. The increase in diagnostic aids and the extension in range of treatment have raised the cost of medical service to the public. Allied to this is the unfortunately prevalent idea that the individual is entitled to look to the government for all things which his devotion to sport and other means of spending his money place beyond his reach. The political parties were not slow to realize that this was another means of attracting votes. Apart from the antituberculosis campaign, there is little to suggest that the political body is activated by a concern for progress in the medical sciences. I know of little evidence that they have what one might call the "Meyers spirit". Compared with the money spent on governmental maintenance, gambling and alcohol, the allocation to medical research is a national disgrace. It seems certain that in the future, as in the past, progress in the healing art will depend on the enthusiasm of individuals. While the people of the various States have a reason to be

grateful to the departments of health for their effective health measures, one cannot help feeling that the desire to contribute something new to medical knowledge is wanting.

It is a pleasing feature of our present position that the Departments of Medicine and Surgery have been created under full-time professors.

It is understandable that the political body is concerned mostly with the political aspect and the health department with the problems now at hand. It is to be hoped that the University, through its Departments of Medicine and Surgery, will be anxious to promote the spirit of inquiry and research. One cannot help being impressed by the fact that hospitals overseas not only make provision for the patient who is admitted today, but also devote considerable energy to the task of discovering more effective means of treating those who will seek assistance tomorrow.

In this rapidly expanding community, the time of hospital staff members is completely taken up with pressing problems of the day, and they have little or no time to devote to research. This is something which should not be allowed to continue, lest we be accused by the medical world of not pulling our weight. By world standards we have done well with the practice of medicine, but poorly with its promotion.

This leads us to the future which you hold in your hands. There are among you, I am sure, men who can, and I hope will, contribute to the advancement of medical knowledge. This will tax your resolution. Every one of you can contribute in the dissemination of medical learning by pausing to help those who are less fortunate than yourselves. In particular this applies to your own assistants, especially those of the nursing profession. An understanding of what you are trying to do and of the reasons underlying your actions makes their tasks seem much more interesting, and is repaid in great measure by increased enthusiasm and efficiency.

It has been said that the people deserve the government they get. It is also likely that the standard of behaviour in the people is influenced by the behaviour of their leaders. If this is so, then you will be under influences which are not in the interest of unselfish devotion to an ideal. The deplorable tendency for people in all walks of life to endeavour to obtain as high a reward for as little service as possible is contrary to the spirit which has produced advancement in medicine, and quite foreign to the ideals and teaching of Errol Meyers.

Avoid, if you can, the development of medicine by regulation. It is already fairly well advanced. The doctor-patient relationship should be preserved, as there is no substitute for the confidence and trust which can exist between them.

While availing yourself of all modern aids, remember there is no short cut to diagnosis, and proper treatment still waits on that. It is significant that at a medical congress the members were told by a distinguished pathologist: "The effectiveness of the antibiotics does not excuse a lack of aseptic technique any more than a blood transfusion justifies poor hæmostasis." That this remark was made at all indicates the tendency, sometimes apparent, to rely on new methods to the exclusion of the old ones. This is a retrograde step, and the temptation is to be avoided. Nothing replaces a careful history and examination.

These, then, are the pitfalls of our new discoveries. For continued advances in the medical sciences, men of honesty of purpose and high ideals will always be necessary. They must be at liberty to plan and work for the future without interference by bureaucratic direction and control. Freedom of thought and action has been responsible for medical advancement, and these freedoms should be maintained. It is in your hands to preserve the "Meyers" spirit.

THE VALUE OF OBSERVATION IN THE TRAINING OF MEDICAL STUDENTS.[1]

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ELABORATE INSTRUMENTS play an important part in medicine today. I wonder if we are not inclined to forget that the most important instrument must always be the mind of man.

It is true that much time and effort is devoted to training and equipping the future physician's mind, and there is much criticism of that training. Wherever one finds a medical curriculum, one finds critics. In fact, they remind one of those mythical people who sprang from dragons' teeth in their number and in the speed with which they appear from almost nowhere. Little attention is paid, however, to the value of the methods used in achieving that training. Not often is the attempt made to consider whether those methods are justified, and to what extent they are at present and are potentially effective.

It is generally accepted that our minds should be trained in the scientific approach. This means that we should acquire the power to perceive, collect and verify the necessary facts and to form a balanced judgement on them. As Wilfred Trotter, the philosopher and surgeon, said, "Knowledge comes from noticing resemblances and recurrences in the events that happen around us"—i.e., by observation. My purpose here is to consider in the space available the overall value of observation in training for the practice of the art and science of medicine.

I want to discuss what observation means to the student of medicine from two angles. First, the evolution of the idea of observation as a method for studying biological phenomena will be considered as an introduction to the modern attitude in general. The second aspect is its specific value in the study of the normal variation in health, and in the diagnosis, prognosis and treatment of disease. I doubt if any facts that will be presented here are new, but the integration of old concepts with the right emphasis is often helpful. Old facts together show a new face.

There are two techniques for collecting data. One is "experiment", which is the controlled inquiry into Nature, while the other is "observation" of the unpredictable experiments of Nature herself. As a means of extending knowledge, the first is much more rapid. Observation of diseased patients may be necessary for the diagnosis of their illnesses; but medical science crawled right up to the end of the nineteenth century because the experimental technique was not widely used. Many great physicians, such as Richard Bright and Thomas Addison, were skilled in observation, but were bound up in the purely observational method, which perhaps has done more to lead medicine away from the truth than to it. The exception to this is seen in neurology, where knowledge was the outcome of the analysis and integration of clinical features. Hughlings Jackson never performed an experiment, but he saw in every patient an opportunity to learn something more of normal and morbid functions. He meditated on the significance of symptoms and sought to fit each casual fact into its place in the general body of neurology.

Today it is recognized that the person in disease can be studied in a genuine scientific manner. The discipline of scientific observation is accepted in the wards. Controlled clinical trials of new preparations, and controlled series of investigations of patients with a specific disease, are becoming more and more common. The gaps in our knowledge in which scientific exploration is wanting are becoming less obvious and empirical procedures less used. In the future, students of medicine will aim

[1] This essay won first prize in the British Medical Association Prize Essay Competition for Medical Students, 1958.

even more to substitute the scientific for the empirical. To this end, all undergraduate training must be directed towards training the student to rely on his intelligence and judgement to observe accurately.

A correct set of values gives reason equal prominence with observation. As Sir Francis Walshe (1957) has said: "Today, perhaps observation is in the saddle, but not always with both its feet in the stirrups of reason. . . ."

In the practice of modern medicine, then, we use our minds in a number of ways, which include the deliberate use of experiment, whether laboratory or clinical; the simple observation of nature, either at first or second hand; and the making of practical decisions, where possible based on reason, but often in circumstances in which our action will be the beginning rather than the end of an experiment, and in which we may have little guidance from our own experience or from that of others.

The immediate value of observation to the student is largely that it has a practical application. One must be trained to observe before one can practise medicine successfully. Observation corrects the aberration of textbook learning. For instance, the student who concentrates during the day at clinics rather than over a ration of 30 pages of text each night is less likely to describe any deformity at the wrist as a "dinner fork deformity". He will not try to make the patient fit the textual description. Rather he will know that the textbook of life is life itself, and that life is exciting, not commonplace. He will prefer saying "I have seen a case", to saying "I have read all about that". One does not learn to be a pilot merely by studying aerodynamics. It is the superficial reading of books which is harmful to the mind, the body and the spirit.

In this connexion, it is revealing to compare the talent of those who have had scientific training with the powers of observation of other people. The nursing staff, whose minds are relatively uncluttered with detailed knowledge, frequently make astute observations in the ward. Another example is the inquisitive child who observes things that the adult does not. An even more striking illustration of sharp observation is found in the Australian aboriginal. In their earliest years the piccaninnies are taken from their mothers by tribal guardians and taught to track goannas, snakes, rats, mice, kangaroos, turtles, and anything else eatable. Following tracks, including human tracks, becomes second nature to them. In later life they are sometimes employed to track criminals, and they can read the ground as clearly as we can read newsprint. One tracker once pointed out to police where two robbers had parted company in the centre of a bitumen highway. There is much justification for urging students to realize the extent to which they can develop the power of observation and its value to them.

The student in training, however, must learn not only to observe, but also to observe accurately. A short inquiry into the factors affecting the completeness and accuracy of observation is therefore to the point.

Observation as the term is most widely used has two aspects. One is the use of visual perception and the four other physical senses to collect data of the world about us. The other aspect is the integration and interpretation of the data, so that it can be understood by the observer and communicated to others as a clearly defined fact, a focal point of knowledge, brought into line with generalized truths and past experience to varying degrees of success. The qualities of a useful observation are that it is accurately and completely perceived and that it is correctly interpreted.

There is a limit to the accuracy of the observer's senses, even if trained. Instrumental means have been found to increase their range. Automatic, impersonal methods of registration such as photography are also important. The use of statistical devices is invaluable in the arrangement of data—as is well illustrated in their successful application to the difficult problems of biometrics, notably of normal variation and heredity. Bad observation may invalidate the whole scientific process.

In the eyes of the modern scientist, however, measurements have come to have more scientific value than the findings of non-quantitative observation. Many present-day medical men regard it as more important to know, for instance, that a sick man uses so much oxygen per minute and has so many red blood cells than to know that he goes to bed late, drinks too much and has a job he despises; yet the non-quantitative information may be of greater value. The cult of measurement leads to a medicine of replaceable, standard parts whose observations can be made by anyone after a little training. The qualitative kind of observation, however, requires qualities of judgement. The ability to make a good judgement certainly does not depend in the first place on measurement, but is much more complex.

To be confined to the quantitative method, to be restricted to laboratories and appliances, is to run the risk of evading the significant side of many problems—significant facts in the clinical field being those which tend to bring a patient's illness into closer relation with known disease processes. All significant facts must be collected before interpretation can take place. For example, the measurement of temperature can be used effectively in diagnosis only if temperature is used as one of a number of diversified data, such as habits, appearance, clinical history, which are correlated by the mind. Further, if a patient has a marked fever, for the purpose of initial diagnosis the thermometer becomes unnecessary—the actual temperature is insignificant.

In the early important researches that now rank so often as classical, apparatus was simple; so was the approach of the scientists concerned—though their intellectual processes were not. Robert Hooke's elementary microscope, inferior to that used by any student today, sufficed—with Hooke's power of observation—to establish the cellular theory of living matter.

Furthermore, the students fifty years or so ago were taught to develop the faculty of assessing by touch the conditions of tissues—bogginess, fluctuation, resistance, tenderness, the state of the arterial wall and the pressure within, or slight increases in ocular tension. They had no sphygmomanometers or tonometers; their apparatus was very simple, consisting of their finger-tips. One old surgeon who was a student in Adelaide in 1876 said that he and his colleagues came to recognize a case of locomotor ataxy or of disseminated sclerosis across the street, and to notice the smell of acetone on the breath of the diabetic who passed them on the pavement.

All signs which clinical teachers elicit can be discovered by anyone possessing normal senses. But a student will not observe them unless he is interested. Interest and accuracy of observation reinforce each other. Probably the best way to become interested is to become interested in the growth of one's power of observation. Like naval cadets, the student should learn the rigorous discipline of observing accurately and giving an account of the observed facts without the aid of notes. I remember, with regard to this method, my first association with "potted" specimens in the pathology museum. A lecturer set each of us students a number of specimens to describe. We were sent back time and again until the description was accurate. Thus observation without the aid of elaborate instruments or even notes is often of great value in training. This bears out the original theme of this essay: that the mind is the most important instrument we possess, especially in the human sciences.

Part and parcel of the student's training is learning to know what are warrantable deductions from the facts and what are not. This involves a higher degree of judgement than do similar deductions concerning the relatively static, inanimate material. The technique of

collection, assembly and judgement must be remembered long after the facts which were used in developing that technique are forgotten. The student may forget the details of mathematical procedure, the anatomy of animals and the intricacies of muscle contraction; but in studying these things he comes to think quantitatively, to recognize the essential unity of living beings, and to appreciate the delicacy of the phenomena of life. It takes time to learn to assess facts, but this is no excuse for scamping this part of the training, especially in the earlier years. The facts themselves should not be allowed to assume a value out of proportion with that given to the way they are used.

In the clinical years, usually more stress is placed on developing the ability to interpret data. Study begins with the living person in some kind of trouble and proceeds to a collection of the facts of many kinds, and at last a conclusion, a judgement, a diagnosis is reached. The student watches all this and often takes part. He exercises himself in observation, considers the data in the light of his sciences, and is finally impelled into diagnosis or judgement. This training depends very largely upon the example of his teachers, and thus only by careful observation of them can the full benefit be derived from the clinical years.

Both history-taking and physical examination involve the same two parts of observation—perception and the integration of the perception into a pattern. In observing behaviour one perceives, say, a smile or a blush, and automatically integrates this with previous observations to recognize that the person is "amused" or "embarrassed". But the smile may mean something else. Some people smile when they are afraid and blush when they are angry. It is the role of differential diagnosis to give the correct interpretation to all the data—as much to behaviour patterns as to anatomical variations.

Even the trained observer, however, may misinterpret what he sees. This has been called the "observer error phenomenon". When trained in recognizing a physical sign, one tends to assume that when one observes that sign it is present, and when one does not observe it, it is absent—except in a few border-line cases. However, experiment, especially among radiologists but also among clinicans, has shown that this is not so, and that trained observers can disagree to a very significant level, far above that accounted for by chance or by borderline cases (Fletcher, 1952). Facts recorded in history-taking also are apt to be influenced by the attitude of the observer (Cochrane *et alii*, 1951). The factors which will help to prevent the observer error, the factors which make for correct interpretations, are complex. Probably some are still unknown. The most important factor appears to be the influence of previous experience and knowledge. In this connexion, the paradox is that the general practitioner often has the advantage over the specialist consultant, despite the latter's superior theoretical knowledge (even in so far as deciding what is normal function for a particular patient). The general practitioner sees the patient first and the disease afterwards, while the specialist sees only the patient in disease.

Loss of clinical acumen arises largely out of a shift of interest, from the patient as a person, to the patient with a disease, to the patient as a container for electrolytes or of electrical potentials recordable by the electrocardiograph or the electroencephalograph. The elder statesmen of medicine are saying this continually in one form or another. Specialization, even hospitalization, may restrict the field of observation more than is desirable, even though it allows more adequate investigation within that field. General practice itself is currently being regarded as a specialty. The medical student who is receiving a "basic training", like the post-graduate student training for any specialty, including general practice, must guard against incomplete observation.

Errors are made by registering and reporting observations that are due to the mind itself—by filling in the gaps according to imperfect past experience. There is a saying: "We are prone to see what lies behind our eyes rather than what lies before them."

The picture in the clinical observer's mind of disease processes is based on many observations. To integrate the multitudinous observations made about a new patient into a recognizable disease pattern is a complex process. Much training is required before rapid diagnosis is possible. The only way to train the mind to collate the information supplied to it by the senses is constantly to take similar data over the same neural pathways. This implies that, for the purpose of training, specific questions concerning the patient and his disease must be asked consciously. These questions are chiefly those set forth in the several good books on clinical method. As we become more trained in the art of observation, the questions are asked more or less automatically and the recognition of disease becomes a habit. A student "hears" the same thing as a cardiologist when listening to a rheumatic heart; but skill in isolating, analysing and reintegrating the sounds into an inferred mitral stenosis is a matter of practice and training.

Alternative interpretations are not usually entertained spontaneously, but observation becomes more accurate and comprehensive when they are. A valuable way of becoming aware of the factors affecting our interpretations is through discussion among independent observers. It becomes clear how many views of the same material are possible. The factors which have influenced the judgement of each observer are brought to light, and their validity can be scrutinized. This provides an argument for seminars and the tutorials in which students can discuss each other's observations under the guidance of a teacher.

Valuable observations arise only if the factors which determine their accuracy are given proper direction. A classical example of the detection of error in observation is to be found in Sherlock Holmes, the creation of Sir Arthur Conan Doyle, who was himself a medical man.

In modern medicine, physiological function, rather than anatomy, has come to be the basis of medical diagnosis and treatment and even of surgery. Pathology no longer consists solely of morbid anatomy and histology. The study of disordered function is becoming the vital part of that subject. The old boundary lines between preclinical and clinical subjects are disappearing, and the medical student is required to know disease as a deviation from normal function.

In clinical work there are many opportunities to become acquainted with normal function. One should welcome the patient who shows no abnormal physical signs. In obstetrics it is very important to know the normal. The basis of good obstetric judgement is more likely to be established in the student who carefully follows a limited number of patients through the latter weeks of their pregnancy, their labour and their puerperium, than in the allegedly keen student who is constantly "in at the finish" of unusual cases, but who neglects opportunities to observe closely any one patient.

The application of observation to diseased patients is not simple. Both the gathering of information by history taking, physical examination and laboratory investigation, and its integration to form a working hypothesis, the diagnosis, pose problems.

The aim while taking a history is to focus the patient's attention on whatever seems most important, and at the same time to influence as little as possible the content of what he says. This means mainly avoiding leading questions. Experienced physicians devote a greater time to taking the history than to physical examination. Failure to make thorough observations by listening has probably led to more mistakes than any other error of approach. In a unit to which I was recently attached,

a wise old clinician solved a diagnostic problem by a careful review of the history. The patient was hypertensive, and had massive œdema, urinary changes, and fundal hæmorrhage and papillœdema leading to a provisional diagnosis of chronic renal disease, probably glomerulonephritis, which had entered the malignant phase. It was then discovered that the patient had consumed large quantities of an antacid powder one week before admission to hospital. The high sodium intake had precipitated renal and cardiac failure. Similar examples are not hard to find.

The value of the history obtained depends on one's assessment of the reliability of the patient as a witness. This, too, calls for observation. The mentally retarded and persons showing signs of senility are poor witnesses. I remember a woman who had repeated attacks of left renal colic, each of which required admission to hospital and the administration of morphine. On each occasion an intravenous pyelogram revealed no abnormality. She alleged that she had passed stones several times, but none were found while she was in hospital. She was urged to bring to the out-patient department the next stone she passed after discharge. When this was analysed it contained no oxalate or phosphates—it was, in fact, a piece of road metal. The woman was then found to be living with her four sons, all of whom were sharing her. Such hysterical patients give very unreliable histories. The more the patient is unable to cooperate in the history, the more vital become observations made by physical examination. Physical signs become very important in children and in unconscious patients.

It is essential to have a diagnostic approach on first viewing the patient. Early thyrotoxicosis can be diagnosed by the nervousness, slight proptosis, rapid bounding pulse and warm moist hands at the outset. The intelligent appreciation of the facies of locomotor ataxia will spare the patient a spate of investigations.

Spot diagnosis is a useful tool, but does not often absolve one from making a confirmatory series of observations. For example, a scrotal swelling may be examined thoroughly from the point of view of inspection and palpation, the cough impulse may be elicited, but one may forget transillumination; yet this may yield the essential fact required for diagnosis. Again, unhurried observation may reveal muscle fasciculation as a significant sign among trivialities. Negative signs, such as the lack of plumpness and yellowness in the aged person with pernicious anæmia, should also be observed.

If special investigations are regarded as aids rather than as substitutes for bedside methods, they will not lead to atrophy of the senses. The medical student is therefore trained to look at the stools before asking for a serum bilirubin test, to feel the pulse before using the electrocardiograph. Laboratory services are of value only when they are more accurate than clinical methods and differ from the latter a significant number of times. No one would doubt the need for radiographic confirmation of the diagnosis of a fracture. In the diagnosis of anæmia, however, it has been shown that as much relevant information can usually be obtained by looking at the oral mucosa and a thin blood film as from a full blood count performed in any but the best pathological laboratories. As students, then, we must be taught the merits of putting new and (more warily) old methods to the test, and of evaluating them critically in the light of our own observations.

If accurate diagnosis depends on good observation, then so do prognosis and treatment. While the initial examination is important, much of value is obtained from subsequent examinations by indicating change from the original condition. Examples which come to mind are temperature charts and the regular recording of the pulse rate, the blood pressure, and the results of ward tests on urine. One serial examination of use to the family doctor is the recording of the position of the apex beat and similar facts at every routine physical examination. Changes in these facts may then be seen to be outside the normal rate of change and therefore an early indication of disease.

The recording of other changes in such measurable things as the mobility of a joint after fracture, or the downward limit of the liver in a patient with neoplastic disease, may be of great importance in prognosis.

With regard to treatment, regular inspection of a boil or an abscess is necessary to determine the optimum time for incising it. Conservative or expectant treatment is becoming more widely employed in some surgical conditions, such as acute pancreatitis and appendicitis. This demands accurate and regular observation, so that surgery can be undertaken at the right time if the patient's condition deteriorates. The prognosis for the post-operative patient, including his need for psychological guidance, depends also on observations made from the start.

The advent of specific therapy calls for more accurate diagnosis. The differential diagnosis of bacillary and amœbic dysentery is relevant. Emetine is of value only in the second disease; it may even kill a patient with bacillary dysentery. Confronted with such a problem, the enterprising student might take his trained eye to the laboratory, with advantage to himself and perhaps the patient. Not infrequently is a case of amœbiasis first diagnosed by the examination of fresh fæces under the microscope of the student who has presented himself in the ward at the right time.

The dosage of drugs must also be controlled by observation, sometimes guided by the knowledge obtained from a scientifically designed clinical trial. It is obviously important to detect the earliest signs of toxicity. For example, it is in the interest of the patient under digitalis therapy to detect the slow pulse or the coupling of the heart beats rather than wait for vomiting or diarrhœa to occur.

By continuous "clinical clerking", medical students learn to judge the merits of treatment and at the same time learn something of the natural history of disease. Every patient examined will be of assistance. It is only by observing disease in the patient that one obtains a clear picture of the wide range of variation in the presentation of illness, and of how far it may differ from the description in the standard text.

Understanding the whole patient is achieved by practising the art of complete observation. Learning to understand the patient as a whole calls for much practice in the art of observation itself.

It is the possession of the scientific outlook that distinguishes the ideal physician from any well-veneered practitioner of the healing art. However, to study patients instead of diseases objectively requires of the observer a cultivated man capable of compassionate and perceptive responses. He must look at Nature for its own sake, as well as for the immediate value of the knowledge obtained. Fortunately, it is the actual training in observation that matures the observer emotionally at the same time as it develops intellect in the ways discussed above. Such a "trained observer" is more impartial in his judgements and more adequate to the task in general. Whether he becomes a research worker or a practitioner, he is rewarded by the thrill of discovery—similar to that described by the surgeon John Keats "on first looking into Chapman's Homer".

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THE VALUE OF OBSERVATION IN THE TRAINING OF MEDICAL STUDENTS.[1]

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The whole art of medicine is in observation.
—SIR WILLIAM OSLER (1901).

ALL noise suddenly died down. The students, newly regimented in their freshly starched white coats, sat expectantly. These youths, with their preclinical years behind them, were about to enter the exciting and new territory of clinical medicine, and now, in this small room at surgical out-patients', they were eagerly awaiting the arrival of that being of whom hitherto they had only heard, but whom they had never seen: the patient.

The man came in. He was a little on the thin side. His face was drawn, his cheeks were pale and hollow. His back was slightly bent and he was wearing a heavy overcoat despite the hot summer day; the belt of his coat was tightly done up in front, and he was also wearing a dull-coloured scarf. After closing the door behind him, he sank his hands in the pockets of his coat, stopped, and looked around. Then, with heavy steps, he made his way to the chair and sat down. As he started talking, the surgeon picked up a pen and began to fill in the personal data at the top of the green sheet for the out-patient department. Then for an instant he hesitated, as he came to the space marked "history". The student sitting nearest the surgeon began to wonder. How, the student asked himself, was one to render a picture of this man with the sunken cheeks and the heavy greatcoat onto that dead piece of paper? Surely one could not just write down "wearing overcoat on hot day" on the history sheet. The surgeon began to write again. He wrote down four words: "Looks ill. Feels ill."

Thinking back, it now seems to the student that this was a very unorthodox way indeed of beginning a history sheet. However, something dawned on the student at that instant, something he has never forgotten since. There was nothing really strange about that man in the overcoat; it was only that he was a sick man; there was nothing else wrong with him at all; he was just ill.

And thus, on the first afternoon of his clinical training, his first medical observation was imprinted deeply into the student's mind: how to tell the sick man from the healthy.

A discussion aimed at demonstrating the value of observation in the training of medical students must be prefaced by the establishment of three concepts. The first is the concept of observation itself, what it means and how it applies to medical students. It is an active process, not merely a passive one. By observation one understands, therefore, not only the reception of impressions as perceived through all the senses, but also the subsequent registration of these impressions, their intelligent interpretation and evaluation, and the storing away of the information obtained for future reference and use. All the sense modalities may be involved, and although the visual is the principal one, observation by the other senses—for instance, the palpation of masses, the smelling of a fœtor, the auscultation of sounds, to take but a few examples—can all be of importance. Even the discovery of a trace of bitterness in table salt could be significant in a medico-legal investigation; the old clinicians used to taste the urine of diabetics to test for sugar.

To exercise this power of observation, a student must possess not only alertness, but also the ability to think clearly and logically and with a degree of intelligence. These talents, inborn in some, may take years to come forth in others, years often long and laborious. The extent to which observation has to be preceded by theoretical study is a debatable point. Clearly, the observer must have enough knowledge to enable him, in the very least, to direct his attention to what is to be observed. That is to say, a certain element of intelligent preselection has to be present. Even if absolutely casual and accidental, to convert a fact seen into a fact seen, registered and imbued with a meaning (which is how observation has been defined above), a certain degree of previous knowledge is required. Once this point is conceded, however, it can be said that this knowledge required may be minimal, and the observation made can still be accurate and of value.

The second concept one should consider is the relationship of observation as a method of acquiring medical knowledge and insight, to other methods usually employed, such as lectures, tutorials, talks and bookwork. This problem is only mentioned here in passing, by way of recognition, and will be elaborated in detail later. There is no theoretical manner of teaching or learning which can, on its own, impart perfect medical knowledge. Observation is a necessity, either following theoretical study, or preceding theoretical study, or carried out in conjunction with it, and it may in itself constitute the main part of the teaching. It transpires, therefore, that to convey first-hand knowledge of medical problems, observation must always take place in some form or other. These facts make it the most important single factor in training.

The third concept is that of the dual role of observation. Firstly, we may see it as the main pathway to the acquisition of knowledge. Observation here serves as a means to an end, where the end is the self-improvement of the student. Secondly, observation can be thought of as an end in itself: a means for the student, who is bent on developing his powers of observation for their own sake, to improve his diagnostic acumen. Naturally, this applies only to the undergraduate; once the student becomes a practitioner, the ultimate end, of course, becomes the welfare of the patient, and so observation becomes converted again to a means to an end. The point is this: that while knowledge can be acquired through observation, being a good observer is an asset in itself.

Let us cast a brief glimpse over the fascinating story of how, throughout the centuries, and by the strivings of many great teachers and medical men, observation came to supersede philosophy and mysticism after a long struggle as the prime method of medical teaching.

Observation has not always played the same role in medical education as it does today. The triumph of scientific methods over the abstract ones is a relatively modern achievement. In pre-Hippocratic Greece, reaching up to the fifth century B.C., we find few recognizable traces of systematic medical teaching; in fact, very few clinical observations had been recorded at all. Those that were recorded prove haphazard and casual, and intimately bound up with the metaphysical and mythological explanations of disease then in vogue. Hippocratic medicine represents a rebellion against this, and it is here that we find the first firm foundations, not only of medical teaching, but also of clinical observation. Works in the Hippocratic collection (450-350 B.C.) show the importance of the apprentice-master association, stressing that the former should learn his trade by travelling with his teacher and observing him treating diseases. Plato, on the other hand, while admitting the importance of observation, pointed out the necessity for a sound theoretical knowledge. Hippocrates himself taught his students largely at the bedside, and much of his teaching consisted of accurate observation which could be immediately verified by his pupils. Already the value of using all the senses is becoming apparent, for Hippocrates taught his students not only to look at a patient, but to palpate him and smell his breath.

Galen performed vivisection on animals in order to teach his students the basic concepts of surgery. He went far to ensure that his students actually learnt by seeing,

[1] An essay awarded a prize in the British Medical Association Prize Essay Competition for Medical Students, 1958.

and made models of surgical instruments for the purpose of demonstrating to them. It is well known how Galen, great teacher and observer that he was, turned in his later life to a more philosophical outlook, and this so altered his teaching that he eventually succeeded in bringing medical thinking to a standstill for many centuries.

The Arabs, great as their medical knowledge may have been, taught no scientific system of observation. The first timid attempts to overthrow the Galenic dogma and to reestablish science in medicine and medical education came from Taddeo degli Alderotti (1220-1300), who at Bologna collected his students in special wards and took them to the bedside, in order to allow them to observe symptoms and signs for themselves. For this, he is considered the founder of clinical teaching. Bartolomeo da Varignana was ordered by the Republic of Venice to keep two or three medical students constantly by his side, and take them into the homes of the sick, so that they might observe the symptoms and substitute for the master should need arise. Mondino di Luizzi introduced dissection for didactic purposes in 1315; thus the teaching of anatomy by observation rather than postulation was founded. He wrote a revolutionary manual of dissection, in which students were shown ways to dissect a body and observe its structures. Whilst di Luizzi did not have the courage to contradict Galen openly, he nevertheless paved the way for his students, who were thus enabled to observe the mistakes of Galen and to seek out the truth. Demonstrators of anatomy became more and more numerous, until observation became the standard way of acquiring anatomical knowledge. Many professors, whose universities lacked the facilities for enabling students to observe the proceedings satisfactorily, dissected bodies at their own homes, and there, for high fees, taught anatomy to a limited number of students. About this time a few medical men began systematically to observe and teach the findings of morbid anatomy, as well as the anatomy of the normal.

In the 1500's, at the beginning of the medical renaissance, medical observation reached an unprecedented peak of perfection, and all traces of the mistaken Galenic postulates were swept away. In Italy, where this process was at the time more advanced than in other countries, amphitheatres and dissecting rooms began to be built; these were designed especially to create optimal conditions for observation by students. The honour of first so recognizing the student's needs went to Pisa, Padua and Bologna, where the first of these permanent establishments were built. These reforms are above all associated with the name of the Belgian Vesalius, teaching at the time in Padua, who maintained that "it is essential for the future medical man to be an accurate observer".

With Galileo Galilei, a new slant on observation swept the whole of scientific Europe, having far-reaching effects also on medical teaching. Galilei was not only an observer of genius and a great theoretician, but successfully related the two faculties as no one had done before him, endeavouring to anticipate his observations, and afterwards striving at fitting his observations into patterns; he was not content, as his predecessors had been, merely to observe the facts and record them. The first to apply these principles to medical work was Harvey, with the resulting brilliant solution of the enigma of the circulation, which even the great Leonardo had failed to solve.

Marcello Malpighi (1628-1694) taught students the value of using the microscope, so that they might make their observations not only on the gross aspects of disease, but on the minute changes as well. Thus, with the primitive instruments of the time, his students could combine their observations in anatomy, histology and histopathology. He also stressed the importance of correlating these findings with the clinical symptoms. This latter work was continued by that great pathologist, Morgagni, who really laid the foundations of modern pathology.

Since these times, the scope of observation has been constantly widening in medical work and teaching. With the birth of bacteriology and experimental pharmacology and the development of clinical knowledge, more and more emphasis came to be placed on the value of observation, until clinical observation eventually replaced problematical "scientific" lecture courses and speculations. The underlying philosophy was now that sense impressions were the important things, and mental phenomena could be deduced from these. As Fourcroy put it at the time, *"peu lire, beaucoup voir et beaucoup faire"*.

With these thoughts in mind, and with the concept of what observation really means, we can now turn to the individual sectors of medicine, in order to demonstrate the value of observation in the training of medical students in each of them. Although this division is deemed necessary for a better understanding of the subject, it should be remembered that all such divisions are artificial, that the process of observation is a continuous and harmonious one, and that all fields of medicine are basically inseparable and always overlap to a large extent.

The Preclinial Years.

Although observation in the early stages of medical training has not yet attained the same profound significance as it will later at the bedside, nevertheless it is extremely important. The student's powers of observation are still somewhat crude and unrefined; they depend more on sensory perception than on the mental processes associated with this.

In learning the basic sciences, the student is seeking facts above all else. Hypotheses and conjectures, inductive and deductive processes, may come later when a sound pattern of basic knowledge has been laid down; but in these early stages the pattern must be made up of facts. Now facts, plain and incontrovertible facts, may be taught by words; however, their acquisition by practical experience—that is, observation—is of far greater value. No fact can be better learnt than when observed, for it is only then that the fact acquires the complete objectivity and corporeality, so to speak, which it needs to impress itself fully on the mind of the student. The amount of knowledge that can be gained by observation is not only qualitatively but also quantitatively greater than that gained from lectures and seminars, for the process of unconscious association, so important and so helpful in learning and recalling, is aided by the variety of objects observed. Just as theory and bookwork seem to present the facts in two dimensions, so observation adds the third dimension—that is, depth—to the very same facts.

Let us take a few practical examples. The study of anatomy by dissection and the direct observation of structures and organs is the most obvious example. It is safe to say that no student will ever understand the anatomy of the lesser peritoneal sac until he lays the abdomen open, and experiences the thrill of putting his fingers through the foramen of Winslow and feeling his right hand through the peritoneal wall of the lesser sac; then, and only then, will he exclaim: "Now I understand!" That little experience at once brings into the student's mind the structures felt during the manœuvre—dubbed by the books as the incomprehensible "relations of the lesser sac"—such as the liver, spleen, stomach, pancreas and so on; the student will remember the anatomy of all these parts by association and without any extra degree of effort. His mind has profited by picking up several facts at once, and all will be retained.

It is impossible to imagine the surgeon who has not studied his anatomy from the cadaver in his student days, in preference to a book. Otherwise he would be unable to tell the elasticity of skin, the consistency of fascia, the firmness of a healthy artery and the brittleness of a calcified one; and indeed, even the difference between small and large bowel, well enough described in all books, cannot be truly grasped until visualized.

In the field of experimental physiology and biochemistry the position is similar. A student already overburdened with names and figures and facts in his theoretical work is likely to confuse the effects of adrenaline, acetylcholine,

histamine and like substances on the contractions of the rabbit's intestine or on the cat's blood pressure. But he will never forget it if he has ever done the experiment himself, for that vivid little drama of the pointer tracing tell-tale waves on the revolving drum is hard to forget. No student will ever mistake tetanic contractions for anything else if he has ever done some electrical frog-gastrocnemius-stimulating himself.

These examples could be repeated *ad infinitum*, but they all drive home the same principle. In the preclinical years, when he is studying the basic sciences, the student must do more than just learn from the books and go to lectures; he must learn to observe the facts. In doing this, he acquires more knowledge and better knowledge, and trains himself for his later studies, when his powers of observation will be faced with greater difficulties.

Approaching the Patient.

Sir William Osler, that great master of observation, wrote:

> The student must first be taught to observe and cannot do better than begin his acquaintance with disease among out-patients. A man with typhoid fever in bed, scoured and cleaned, looks very different from the poor fellow who totters into the dispensary . . . . The seeing eye and the feeling finger are products of long training. How to see and what to see, how to touch and what to touch constitute the main lesson of the hour.

With these few words, Osler has already pinpointed the essential reason why observation is so significant in clinical work. It is here that the student begins to build himself into the future doctor; here his ability to learn and acquire knowledge from second-hand descriptions of others is suddenly thrust into the background. He comes face to face with disease, with the patient as a person, and with the problems of everyday people. He must learn how to apply the scientific knowledge he already possesses to something living; and he must reduce the mysterious and obscure ailment of the man in front of him to a cut-and-dried name of a disease, with a cause, a pathology, and a cure. This task in the beginning may seem incredibly difficult, for a patient with a peptic ulcer does not really look very out of the ordinary; in this he is quite unlike the ulcer specimen in the pathology museum.

It is undeniable that training alone cannot accomplish this. The personality and capability of the student must also be considered. He must be able to lend a patient ear, a clear mind—and a sympathetic heart when required. But if he has all these, and if he is keen and willing, then his greatest tool in achieving the desired *rapprochement* between the patient and himself is in observation—"the seeing eye and the feeling finger". The student has to learn to observe the symptoms and signs of disease in the light of the patient's story and personality, and translate these into concrete entities in terms of pathology, formulating a diagnosis. It follows from this that the student should be able to observe everything about the patient. His position on the bed, his movements, colour, breathing; his outward appearance and manner, his gait, his speech, manifestations of his personality and character, as well as the signs elicited on physical examination; all should be subject to careful scrutiny.

The importance of observation in making a physical examination is obvious. The physical examination really consists wholly of observation, and in almost all diseases thorough examination will yield at least some abnormal signs. Whether these findings are gross, such as a large pleural effusion, or minute, such as a single tiny melanotic pimple, depends on the case. All students should be able to pick the grosser signs. However, the difference between them, both at the time as students and in the future as practitioners, will be marked by those who can detect those revealing small signs which have brought many a disease to the light. And the only way to acquire this ability is by constant, repeated, meticulous and systematic observation. Here, then, is the key to later success as a diagnostician; it is on this that the student will stand or fall as a practitioner.

Constant self-improvement should be aimed at. From picking an aortic systolic murmur or an enlarged liver, one should graduate to recognizing the jugular pulse of auricular fibrillation and diagnosing Perthes's disease without recourse to radiology. Then the student should learn to estimate minimal amounts of muscle wasting without guesswork; he should look for and find spider nævi, liver palms, xanthelasmata, Heberden's nodes and hidden swellings, even if the patient does not complain of these and is unaware of their existence. He should learn what different degrees of tenderness signify, and how to elicit them: the deep tendon insensitivity of tabes, the sternal sensitivity of leukæmia, the exquisite tenderness of osteomyelitis. He should be capable of conducting a vaginal or rectal examination with efficiency, and of spotting abnormalities. He should observe and learn the significance of combinations of skin colour and temperature in various circulatory disturbances.

Above all, his observations must be systematic. It is not good enough to observe distortion of the right maxilla, examine the mouth and find nothing, if one forgets to look under the tongue and find the squamous carcinoma there. In fact, such lop-sided observation may be outright dangerous; a laparotomy may be performed for a carcinoma of the stomach if examination of the testes, possibly revealing a primary malignant growth, has been omitted.

Many more examples could be quoted; but these few will have sufficed to show how important it is for the student to exercise his powers of observation to the fullest when examining a patient. Now let us turn to another aspect of the student-patient relationship. This comes into play indirectly, either before the actual examination, during it or after it, as the examiner talks to the patient and carries out apparently casual observations. The first thing to appraise in this manner is the personality of the patient. Much attention is being paid nowadays to the psychosomatic side of medicine; but even before the rise of this relatively new science all old clinicians knew that there were things about patients which, although not connected directly with the examination, could throw light upon the complaint. If a young man comes into the surgery wearing an immaculately pressed suit and tie, folds his overcoat with a dry-cleaning-parcel neatness and places it squarely on a chair beside him, and displays other signs of meticulous, order-loving and perhaps over-conscientious behaviour, then if this young man is suspected of suffering from ulcerative colitis, these observations will be of great value in establishing the existence of an obsessive personality—so commonly associated with ulcerative colitis. The way a patient shakes hands—from the shoulder in elation, from the wrist in depression—may be helpful. Incongruity and incoherence of speech and manner, observed during history taking, will put the student on guard with regard to the accuracy of the patient's relating of the symptoms. In one case, the story of a patient with neurological signs that he was an amateur boxer who had suffered a number of "K.O.'s" led some students to consider the possibility of cerebral accident. Later, however, inconsistencies appeared in his story, and when these were observed, further investigations were made. It eventually turned out that the patient had never as much as been inside a ring, and was in fact suffering from an organic cerebral condition with confabulation as the outstanding feature.

The gait of the patient should be carefully observed, otherwise it may be impossible to distinguish between a tabetic, a paralytic and a spastic type of gait. It is quite possible for a patient with lateral sclerosis to have no signs whilst lying in bed, yet to show ataxia on walking. The right kind of observation can lead to a diagnosis even if it is made accidentally; thus a patient with enlarged glands was by chance seen to be scratching himself vigorously, and this led to the eventual correct diagnosis of Hodgkin's disease.

The student should realize that observation, in clinical work, is really more important than concrete knowledge. It is no use knowing the symptoms and signs of the

diseases if these cannot be elicited when necessary; but an observation made with accuracy, even if its significance is obscure at the time, will lead to further thought and research and the eventual clearing up of the problem. One may with advantage quote Osler again, as he speaks about the medical student: "Teach him how to observe, give him plenty of facts to observe, and the lessons will come out of the facts themselves."

The Student and the Hospital.

This discussion would not be complete if the special role that the hospital plays in the training of the student was left unappraised. The hospital is much more than just a source of patients to the student. The everyday routine of a hospital illustrates some of the fundamental principles of hygiene and surgery. Furthermore, association with the hospital enables the student to make his own observations also in the fields of obstetrics, surgery, anæsthesia and others.

To take the problem of hospital cross-infection, it can easily be seen how observations made in a ward where isolation nursing is being carried out will contribute a great deal towards the basic education of the student in preventive medicine. A great deal can be learnt by simple unobtrusive observation in the wards of this great medical machine, the hospital. The recovery of the patient can be followed up, and the signs of complications looked for. Observation here will aid the student in later life in detecting such complications readily and earlier. The effects of drug treatment and its side effects can be seen at first hand. Casualty offers no end of valuable material, such as acute abdominal conditions, which can be diagnosed with confidence only if they have been observed once before, and if a mental image of the patient, in the various stages of shock, has been retained. The student should also watch bronchoscopies and other such investigations. No student who has seen a bronchoscope being passed down the trachea of a sensitive patient will ever recommend the procedure light-heartedly. The administration of anæsthetics is yet another art which can be learnt only by assiduous observation. In standing guard over the patient, his breathing, his muscles, his pupils and his reflexes, the anæsthetist relies almost purely on experience acquired by observation. Again, in the field of obstetrics, the same principles apply; prenatal care, care during confinement and care during the puerperium all involve the intelligent use of the senses sharpened by previous experience and observation.

Last but not least, we come to surgery. The best books and lecturers cannot teach precise surgical technique. This must all be learnt by observation—by watching, feeling, assisting, and drawing one's own conclusions. To judge the natural resistance or mobility of organs as compared with some anchored by disease; to be able to tell an appendix stuck to the parietal peritoneum by its feel; to know whether a section of bowel is viable or not: these are all things acquired by observation only. Similarly, no one who has even once cut through a scirrhous carcinoma of the breast can ever forget the classical "unripe pear" feeling.

Hospitals also enable students to make what is perhaps their most valuable observation—the observation made on themselves. Skill in putting on a plaster cast will be enhanced by the passive experience of having one put on one's own leg or arm; familiarity with the "iron lung" is attained only by trying it oneself; the principles of artificial respiration can be grasped by trying out the Eve rocking stretcher.

Observations on the patient directly are therefore not the only concern of the student. He can learn much about medicine by just observing all that goes on around him; this is why time spent in a hospital ward is always well rewarded.

Conclusion.

"Observation and again observation", as Pavlov put it. Now there arises another problem: seeing that observation is the most valuable tool of the student, how can he be made to put it to his best advantage? "Too often, 'the hungry sheep look up and are not fed', and for the bread of the wards given the stones of the lecture-room and amphitheatre"; thus did Osler plead on behalf of the student. What can the modern medical teacher do to provide his student with the right sort of material to observe and make sure that he makes the best use of it?

To answer this question it is useful to turn to the criteria laid down by the philosopher John Dewey for what he calls the optimum conditions for observing. Firstly, the nature of the subject matter is of importance. It must "come within sensory perceptibility". This means, then, that the student should be enabled to have ready access to the patient. Further, the subject matter either must permit simultaneous observation by a number of independent observers, or else it must be substantially repeatable. It is understood, therefore, that it is to the advantage of the student to be able to make an observation together with his colleagues and then compare notes; for the true nature of the things observed will thus be brought out more clearly, and defects in his technique of observing will be corrected. To ensure that the observations are repeatable is much more difficult, for there are no two phenomena in medicine exactly alike. However, the more often the student is given the chance to observe, the nearer will this ideal be approached. Another condition set forth by Dewey is that the observer's sensory equipment must be physiologically normal and not subjected to fatigue. This latter condition is very important and should be adhered to by judicious selection of material, timing of tutorials and arrangement of sessions, which should all aim at permitting the student to be at the peak of his sensory efficiency. Similarly, Dewey states, the observer's perceptual equipment must be capable of alert and sustained attention; it must include sufficient past experience with similar subject matter, yet not be "routinized" enough to prevent a fresh approach; it must be free from strong interests and personal prejudices relating to the subject matter; and it must be on guard against the perils of erroneous inference. These conditions are exacting, yet necessary. Intelligence and insight are needed on the part of the student; wisdom and judgement on the part of the teacher. Only when all these meet will the student be able to appreciate the value of observation to its fullest extent.

It is observation, then, that teaches medicine. The student who merely sits and studies at his books may be brilliant at his examinations and yet an utter failure as a medical man. It will be the student who has sought contact with medicine on more intimate terms, who will carry on the traditions of the great clinicians of the past. Books and lecture halls are not truly inspiring things; in fact, they can be very uninspiring. They teach knowledge with a cold, distant and impersonal approach. Medicine requires something more than that, and therefore something that the books cannot offer. Let the student go forth into the world of the sick and let him observe their troubles, employing all the powers and talents that he has in doing so; for, as Peter Mere Latham remarks: "It is by your own ears and your own minds and (I may add) your own hearts that you must observe and learn and profit."

THE STATE OF IMMUNIZATION OF INFANTS ADMITTED TO HOSPITAL: A SURVEY.[1]

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THE survey described in this paper was suggested by Professor Lorimer Dods, and was undertaken early in 1959, while I was a medical student at the Royal Alexandra Hospital for Children, Sydney.

[1] This work was carried out under the direction of the Professor of Child Health, Institute of Child Health, University of Sydney.

In the course of taking histories from the parents of infants admitted to hospital, the impression had been gained that many children were not being adequately protected by immunization against diphtheria, pertussis and tetanus. It was decided to determine the validity of this impression and, if it was true, to define the number of infants adequately and inadequately immunized.

Method.

All infants aged from three months to two years and eleven months (inclusive) admitted to hospital between January 14 and February 17, 1959, were included in the survey. The group studied was otherwise unselected.

The lower age limit of three months represents the earliest age at which immunization is usually commenced. The majority of immunized children of all ages have, by the age of three years, already had at least one course of injections. It was thought that any increase in the age limit chosen tended to increase inaccuracy in the information provided by parents.

The survey was carried out by means of a *questionnaire*, which was filled in either by the admitting officer or at a later interview. Parents were asked whether their children had been immunized against diphtheria, pertussis or tetanus. Parents of infants already immunized were asked about the preparation used, the child's age at the time of the initial as well as the subsequent injections, and whether they had been given any written record of the immunization procedure.

Results.

Two hundred and sixty-three children aged between three months and two years and eleven months were admitted to hospital during the five weeks of the survey. No information was obtained concerning five of these infants, and of the remaining 258, 108 (41%) had not, on the data available, been immunized.

Figure I illustrates the age distribution of immunized and non-immunized infants. Those in the process of immunization or already adequately immunized at the time of the survey are represented in the lower part. The proportion of unimmunized children can be seen to decrease with age.

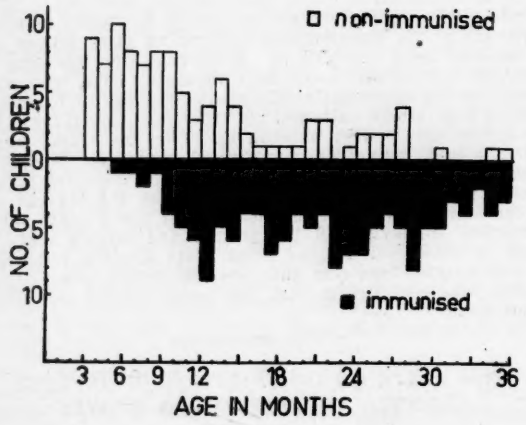

FIGURE I.

None of the parents of the unimmunized children mentioned any specific objection to the procedure, and the most common response was a vague "we always wanted to, but never seemed to get the time".

One hundred and fifty-one (59%) of these infants were said to have been immunized against diphtheria, pertussis or tetanus. For 145 the preparation used was a triple antigen; for three, diphtheria and pertussis antigen; and for a further three, diphtheria antigen alone. The following information was obtained concerning 98 of the 145 infants immunized with triple antigen.

Immunization in progress at time of admission to hospital	12
First course completed:	
(*a*) Less than 12 months after last injection	36
(*b*) Without "booster" 12 months after last injection	44
(*c*) With "booster"	2
Defaulted	4

Injections were commenced at a mean age of 6·6 months and at a mode of 6·0 months. Figure II is a cumulative diagram of the age at initial injection of these 98 infants. It will be noted that: (i) by the age of three months, 10% of the infants had commenced the course; (ii) by the age of six months, 59% had commenced the course; (iii) by the age of 12 months, 93% had commenced the course; (iv) by the age of two years, 100% had commenced the course.

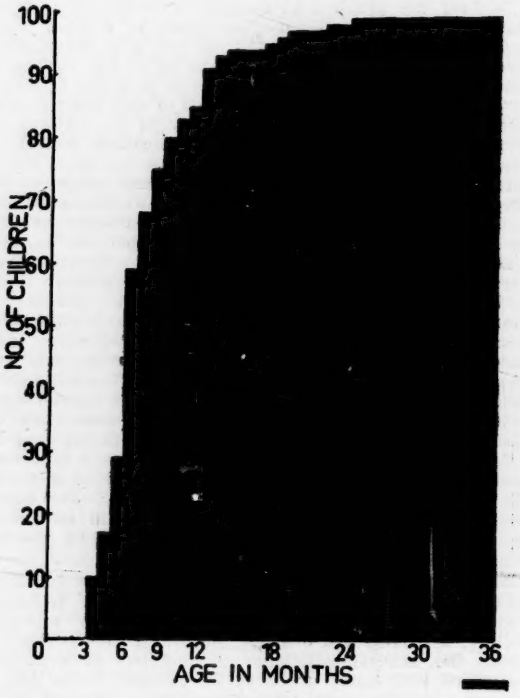

FIGURE II.

Only five parents of the 151 immunized children possessed a written record of the procedure.

Discussion.

The results of this short survey reveal that only 59% of the 258 infants studied over the period defined had been protected against diphtheria, pertussis and tetanus. These infants are in an age group susceptible to diphtheria and tetanus, and highly susceptible to pertussis. While the results do not necessarily reflect accurately the position in the general community (because this was a selected group), they do reveal inadequate protection of infants in the areas from which the hospital population is drawn. Responses from the parents interviewed suggest that failure to have their children immunized is often due to ignorance or lack of interest rather than to active opposition.

The members of the hospital staff have become aware of their own responsibility in immunizing children likely to remain as in-patients over long periods; but the responsibility for encouraging early and adequate immunization rests in the first place on medical practitioners in the community.

Only two of 46 children eligible had been given the "booster" injection sometimes recommended (12 months after the initial course) for maximal protection against pertussis.

Analysis of the data reveals that in the group studied, three to six months is the usual age for commencing immunization; but 41% of the immunized group had not commenced injections by six months — an age of high susceptibility to pertussis.

Of special significance is the low number of parents (five out of 151) possessing any record of their child's immunization. Accurate information on the nature of the immunization procedure and the date of injections is essential, and seems rarely to be available in practice. This is of particular importance in relation to immunization procedures directed against tetanus, and as the child grows older the value of such records cannot be underestimated.

Summary.

1. Only 59% of 258 infants aged from three months to three years, admitted to the Royal Alexandra Hospital for Children between January 14 and February 17, 1959, had been immunized against pertussis, diphtheria and tetanus.

2. Of these, 59% were immunized by the age of six months and 98% by 12 months. The need for early immunization is stressed.

3. Only two of 46 eligible children had been optimally protected against pertussis with a "booster" injection 12 months after the initial course.

4. Only five of 151 parents had any written record of immunization of their children.

Acknowledgements.

I wish to thank Professor Lorimer Dods for his encouragement, Dr. Bryan Dowd for his assistance, and also the admitting officers at the Royal Alexandra Hospital for Children and the staff of the Institute of Child Health for their help.

Reports of Cases.

A CYST IN THE DELTOID ASSOCIATED WITH RHEUMATOID ARTHRITIS.

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THE following case is reported on account of the unusual features which it presented.

Clinical Record.

The patient, an unmarried female, aged 26 years, complained of a swelling in the upper part of the right arm, which she had first noticed two months earlier. It had increased in size and was painful, especially when the arm was abducted. She also had hard yellowish nodules of about six months' duration on her elbows. These nodules were not painful, but she sought treatment for æsthetic reasons.

She gave a past history of having been treated for rheumatoid arthritis, which commenced in 1949, when she was 16 years of age. She continued to suffer from occasional pain in her knees and elbow joints.

On examination, the swelling in the arm was found to be about the size and shape of a hen's egg. It appeared to lie deep to the deltoid. Only slight lateral movements were possible, the mass being found to be fixed with upward and downward movement.

At operation, the tumour was found to be a cyst. It was embedded in the substance of the deltoid, extending deep to its muscle fibres, being partly fixed to the periosteum of the humerus, lateral to the tubercles. It extended superiorly to the acromium lying under it, but did not appear to have any connexion with the joint capsule.

The cyst contained very small amounts of glairy opalescent fluid and over one hundred faceted "cartilaginous-like" bodies measuring from 2 to 8 mm. in cross-section.

Two nodules from the elbows were also removed, and these together with the cyst were sent to the Microbiological Laboratories of the Department of Public Health, Sydney, for examination and report. The pathologist reported as follows:

> A large cyst measuring 6 cm. at its widest contained over 30 faceted "loose bodies" varying from 2 mm. to 8 mm. in cross-section. The wall of the cyst was irregular in thickness, from 1 mm. to as much as 6 mm., its inner surface was smooth and glistening, but at one spot the surface was rugose and here some partly faceted papillæ resembling the "loose bodies" were attached.

On microscopic examination the cyst wall and the nodules from the elbow showed a marked increase of collagen in the substance of which areas of "fibrinoid" necrosis surrounded by palisades of radially arranged fibroblasts were present, the appearances being characteristic of rheumatoid arthritis. The "loose bodies" showed masses of acellular necrotic collagen, a few of which showed an occasional ghost cell. Special staining (P.T.A.F.) failed to reveal muscle cells.

Parts of the cyst wall to include the papillæ were examined and showed villous folds of synovial tissue, with many blood vessels and branching fibroblasts, confirming that the cyst arose from a protrusion of the synovial membrane. The papillæ which were attached to the cyst wall by slender stalks consisted of cores of œdematous connective tissue in which chronic inflammatory cells and small multinucleated giant cells were present, some resembling Aschoff giant cells while others were of the foreign body type. The surfaces of these papillæ were found to be covered with a layer of firinoid exudate. It was easy to see that the loose bodies originated from these degenerated papillæ which had become dislodged from the cyst wall.

The overall picture was that of rheumatoid arthritis. The presence of the cyst in the deltoid muscle together with "loose bodies" was an unusual feature of this disease, to which no reference could be found in the literature.

Comments.

(V. St. E. D'Abrera.)

Cysts arising from the knee joints, and known as Baker's cysts, have been found to extend as far as the tendon of Achilles (Boyd, 1942). It is not altogether impossible for such a cyst to have arisen as a protrusion of the synovial tissues from the shoulder joint and extended into the deltoid. Sometimes the connexion between the cyst and the articular cavity, especially when long and slender, may become traumatized, inflamed and obliterated by cicatrization. These Baker's cysts are associated with a variety of pathological conditions and no doubt rheumatoid arthritis, although not hitherto recorded, may be one of such conditions.

In this particular case the protrusion of the synovial membrane into the deltoid must have occurred before the rheumatic process took place and later, with repeated traumatization, its collagenous components were also affected by the specific inflammatory process.

The same pathological condition which affected the wall of the cyst extended to the papillary processes and excrescences of the proliferating synovial villi and as their blood supply failed from the degenerative rheumatic changes, they were cast off into the cyst cavity by a process of auto-amputation. When several such bodies become tightly packed in a cyst, they distend it and with the glairy fluid usually present their surfaces get lubricated and faceted. With continuous movement of the arm these "loose bodies" dislodge others from the cyst wall, so that ultimately hundreds are produced.

These "loose bodies", also known as "melon seed" bodies are unlike "joint-mice" as they do not contain cartilage. Baker's original articles were published in St. Bartholomew's Hospital Reports in 1877 and 1885.

Acknowledgement.

I am indebted to Dr. V. St. E. D'Abrera for his report and comments.

Reference.

BOYD, W. (1942), "Surgical Pathology", Saunders, London: 767.

MEGALOBLASTIC ANÆMIA DURING ANTIEPILEPTIC THERAPY.

By T. WILKINSON,
Clinical Pathologist, Royal Newcastle Hospital.

RECENTLY, Stokes and Fortune (1958) reviewed 36 cases and reported a further case of megaloblastic anæmia occurring in patients receiving anticonvulsant drug therapy. The majority of these cases suggested that a folic acid deficiency or a derangement of folic acid metabolism was responsible for the megaloblastic anæmia.

The suggested mechanism is that the anticonvulsant drugs have an antifolic acid action, which, however, is insufficient to produce megaloblastic anæmia in the majority of epileptics, and its incidence depends on certain coincidental factors such as inadequate folic acid intake, pregnancy, intestinal malabsorption, etc. It is necessary to exclude vitamin B_{12} deficiency as being the cause of the megaloblastic anæmia, whether this is due to dietary deficiency or to Addisonian anæmia.

Clinical Record.

On November 4, 1958, a mentally retarded epileptic boy, aged 10 years, was referred from the medical out-patient department of the Royal Newcastle Hospital because of his pallor, loss of weight, diarrhœa and anorexia.

He first came under notice in March, 1954, because of his behaviour at school. His mental age was about 3·5 years when he was aged five years and seven months, and he had an intelligence quotient of 61. His first epileptic seizure occurred in April, 1955, and in August, 1955, he was admitted to hospital after a series of major epileptiform convulsions. He did not have a fit in hospital, and he was discharged, the treatment being phenobarbitone, one-quarter of a grain three times daily.

Half a grain of "Dilantin" twice daily was started on February 15, 1956, and chlorpromazine, 25 mg. twice daily, was added on March 14. Treatment with phenobarbitone, "Dilantin" and chlorpromazine continued in the above-mentioned dosage with good control of seizures. His behaviour deteriorated, however, and from May, 1957, he became uncontrollable. At the same time the seizures became more numerous, and he rarely had more than five to six days' freedom from fits and minor epileptic equivalents. He was admitted to Watt Street Mental Institution early in 1958, and from there he was transferred to Milson and Peat Island. He fretted, apparently refused to eat, developed severe diarrhœa and rapidly deteriorated in his physical condition. Frequent fits continued, and when his mother brought him home from the mental hospital, he was allegedly so weak that he was hardly able to stand unaided. At home his weakness retrogressed, but remained sufficient to prevent his restlessness and hyperactivity.

On examination, he was a pale, thin, very listless child, and the only other abnormality was a variable pulmonary systolic murmur with a split-second pulmonary sound. On November 24, 1958, his hæmoglobin value was 7·5 grammes per 100 ml., and the red cells were macrocytic. Further investigation revealed a mean corpuscular volume of 122 cubic microns, a mean corpuscular hæmoglobin value of 42γγ, and a mean corpuscular hæmoglobin concentration of 34%. There were 3·8% reticulocytes. Total leucocytes numbered 6350 per cubic millimetre, with neutrophils 53%, lymphocytes 40% and monocytes 7%. The red cells showed a moderate amount of macrocytosis with moderate anisocytosis, slight poikilocytosis and slight polychromasia.

Sternal marrow was easily aspirated and showed many particles. The smears showed it to be hypercellular with a myeloid-erythroid ratio of approximately 1:1. The erythroid series was megaloblastic with many primitive cells present. Giant myeloid cells and giant megakaryocytes were also conspicuous.

Owing to the difficult character of the patient, a gastric juice aspiration was not attempted. A tubeless test for gastric hydrochloric acid gave a negative result. Fæcal fat was estimated over a four-day period, and this amounted to 65·6 grammes, equivalent to 48·6% of the dry weight. The fat intake assessed for the period was 270 grammes, thus indicating an absorption of approximately 75% of the whole.

Serum collected on December 19 showed a vitamin B_{12} level of 240γγ per millilitre.

Inquiry into diet showed that qualitatively it was poor, being restricted to milk and a few carbohydrate foods. The child's average daily intake was: protein, 57 grammes; carbohydrate, 153 grammes; fat, 68 grammes; Calories, 1500; calcium 1·8 grammes; iron, 2·9 mg.; vitamin A, 3300 I.U.; thiamine, 0·6 mg.; and vitamin C, 14.6 mg.

Treatment was commenced on November 30 with five grains of folic acid three times a day, the dosage of anticonvulsant drugs being maintained. On December 5 reticulocytes were 23% and the hæmoglobin value was 8·0 grammes per 100 ml. By December 11 the hæmoglobin value had risen to 10·5 grammes per 100 ml. and reticulocytes had fallen to 6·2%. The hæmoglobin value on December 16 was 13·6 grammes per 100 ml. By this time the patient's appetite had improved vastly, and his diarrhœa had settled. When seen on January 12, 1959, he was very well and had put on one stone in weight and was having normal stools. He is continuing to have 1·5 grains of "Dilantin" three times a day, one "Mysoline" tablet three times a day and five grains of folic acid three times a day. His epilepsy is well controlled and his behaviour is reasonable.

Comment.

Records show that this patient had a normal blood picture on March 29, 1957. He was admitted to a mental institution about twelve months later, so that until February, 1958, he had been treated with "Dilantin" and phenobarbitone for approximately two years without hæmatological disorder. The anæmia, steatorrhœa and weight loss followed the period of anorexia and fretting on his admission to hospital. It would appear that the low dietary intake of folic acid was an important factor in this case. The subsequent development of steatorrhœa is presumably a manifestation of folic acid deficiency, and this itself would add to the vicious circle, resulting in lowered absorption of folic acid available in the diet.

The most constantly involved anticonvulsants have been primidone ("Mysoline") and phenytoin ("Dilantin") either alone or in combination with phenobarbitone.

The case presented illustrates that anticonvulsant therapy with these drugs can be carried on without undesirable hæmatological effect, provided extra folic acid is offered to the patient.

Acknowledgement.

Thanks are due to the Royal Melbourne Hospital pathology department for the vitamin B_{12} assay.

Reference.

STOKES, J. B., and FORTUNE, C. (1958), "Megaloblastic Anæmia Associated with Anti-Convulsant Drug Therapy", *Aust. Ann. Med.*, 7: 118.

Reviews.

The History and Philosophy of Knowledge of the Brain and its Functions: An Anglo-American Symposium: London. July 15th-17th, 1957. Edited by F. N. L. Poynter; 1958. Oxford: Blackwell Scientific Publications. 8¾″ × 5½″, pp. 282, with 12 illustrations. Price: 22s. 6d. (English).

THIS book comprises papers delivered at a symposium held in London in 1957. In a preamble Wilder Penfield refers to advanced views contained in the Hippocratic Corpus, and following papers deal with other classical and non-Western concepts of psychic function. Macdonald

Critchley discusses the origin of language, from ideas of divine conferment of a perfect system such as the *lingua Adamica*, supposed to be Hebrew, up to Max Müller's and later theories. To the facetious appelations suggested by various critics to these theories (bow-wow, pooh-pooh, etc.) Critchley adds "colly-wobble" to Küssmaul's hypothesis of origins in infantile gurgling and "comfort sounds". Denis Williams and Russell Brain deal with Hughlings Jackson's psychoparallelistic theories. Jackson's thought, Brain states, may be considered ahead not only of his own time, but in some respects of our own. Walter Riese points out that Descartes, far from having presented a narrowly mechanistic hypothesis, held that the soul set the limit to the mechanical part of human personality and constituted the essential difference between man and brute. Reil's concepts of brain function, critically reviewed by Aubrey Lewis, were finally expressed in philosophical terms after vain attempts to find chemical determinants. H. McIlwain outlines chemical contributions, including the work of Couerbe and Thudicum on phospho-lipoids *"ohne Phosphor keine Gedank"*. New technical procedures opened avenues for research, such as Du Bois-Reymond's demonstration of electrical currents in nerve by means of the galvanometer. A century ago Carpenter and Laycock postulated the sensory ganglia, including those in the medulla, as the sole seat of all conscious states. Then the brain-acting-as-a-whole idea began to find favour, to be succeeded by Penfield's conception of a centrencephalic system with which the cortex "works in harmony". F. R. M. Walshe will have little to do with "Carpenter-Penfield" and allied "neuromythological exercises".

This story of the development and enrichment of early concepts of nervous fluids and humours, as set out by British and American leaders in the field of cerebral physiology, is one of absorbing interest. The volume is profusely illustrated.

Brain, Memory, Learning: A Neurologist's View. By W. Ritchie Russell, C.B.E., M.D. (Edin.), D.Sc. (Oxon.), F.R.C.P. (Edin. & Lond.); 1959. Oxford: Clarendon Press. 8½" × 5½", pp. 152, with 12 illustrations. Price: 22s. 6d (English).

IN this book Dr. W. Ritchie Russell has drawn largely upon his extensive clinical experience in speculating about the higher functions of the brain. In the preface he states that his material has been presented in a manner that can be understood by those with only a limited knowledge of physiology. To such readers the plates of Cox-Golgi preparations of the mammalian cortex, though excellently reproduced, will appear confusing. Cerebral trauma and epilepsy receive special attention. In some of the milder cases of injury to the forward areas of the brain, the symptoms ascribed to the injury are of a psychoneurotic pattern common enough in persons who have suffered no physical trauma. The author suggests that, as pain appears sometimes to cause fear, the reverse also takes place; pain and fear may facilitate each other if (a big "IF") they act on the same mechanism. When pains appear to have a segmental distribution, they may be abolished by injecting procaine into ligaments or muscles at the appropriate level. To make certain, Dr. Russell reproduces or intensifies the pain by a preliminary injection of hypertonic saline. Are all afferent impressions automatically extinguished unless they arouse attention, as the author asserts, unless we are prepared to speak of attention at brain-stem and spinal levels? Disturbance of fronto-hypothalamic mechanisms by disease or injury, including leucotomy, is reflected not so much in the ego of the psychoanalyst's concept, as Dr. Russell states, as in the super-ego. In two short closing chapters the author makes some banal observations about learning, character and the highest level of the brain. In our attempts to make human life more worth while, we are urged "to comprehend the incredible possibilities for development that are present in every child's brain".

This is a superficial work which is unlikely to appeal to a senior medical student, but which may interest some readers in non-medical disciplines.

Psychiatry in General Practice. By J. A. Weijel, M.D.; 1958. Amsterdam, London, New York and Princeton: Elsevier Publishing Company. London: D. Van Nostrand Company Limited. 9" × 5½", pp. 216. Price: 37s. 6d. (English).

DR. J. A. WEIJEL has, in this book, drawn on his experience with Professor Querido's social psychiatric service in Amsterdam, in advising general practitioners as to methods of eliciting emotional problems in their patients, especially those who seek advice under cover of somatic symptoms. The first few chapters are devoted to somewhat philosophical considerations of subjectivity, objectivity and stress. Apparently it was only after some years of general hospital practice that Dr. Weijel came to realize that stress had to be evaluated in terms of effects on the particular individual. Very properly he emphasizes the importance of diagnosis, and to this end a few pages devoted to a sketchy account of major psychiatric conditions serve as a reminder. The author then addresses himself to his main task of helping the medical practitioner to elicit those details of the patient's history which may have been of importance in precipitating somatic but emotionally determined symptoms. To this end Dr. Weijel has devised a psychosocial questionary, against which the general practitioner can mark deviations from common experience or courses of action. Moreover, in answering the questions the patient may unguardedly let out items of highly significant information. "The only way to approach the background of a somatically presented complaint", Dr. Weijel states, "is to introduce a psycho-social 'stethoscope' for revealing the psychological and social aspects of the patient's life." Patients are far more ready to strip their bodies than their minds. Dr. Weijel's method, applied with careful observations of the patient's behaviour under examination, especially the manner in which he replies to questions, will certainly be revealing. The way in which the questions are put and the order in which they are selected are, of course, of the greatest importance, and must be learned more by experience and clinical instruction than from textbooks.

In treatment Dr. Weijel makes a distinction between identical methods, when mental symptoms are treated by psychotherapy, and non-identical, when some form of physical therapy has a psychological significance for the patient. In general practice, psychotherapy can be on only a fairly superficial level. Few general practitioners are likely to find the time to work through Dr. Weijel's scheme; but the student in training will learn much from it which he can apply later to his particular type of practice.

Treatment of Lung Cavities and Endobronchial Tuberculosis: With Special Reference to Treatment in Malaya. By Beryl E. Barsby, M.D., M.R.C.P.; 1959. Edinburgh and London: E. & S. Livingstone Limited. 8½" × 5½", pp. 156, with 46 illustrations. Price: 20s. (English).

AT first sight, this cover title induces a feeling of irritation. Why should a book be written about the treatment of some particular pathological feature of pulmonary tuberculosis? However, perusal of the preface permits of a more tolerant consideration of this monograph. Dr. Barsby has, in fact, published a thesis covering her study of endobronchial tuberculosis among patients attending the Johore General Hospital, Malaya, over a period of three years. She carried out 11,000 bronchoscopies on several hundred patients, following up the results of treatment with great industry. As she states, "most of this work was originally written for the British Tuberculosis Association Research Prize, 1956" (which we presume she won), "but its amplification is justified on the grounds of the importance of endobronchial tuberculosis in Asia". No one would gainsay the tremendous problem presented by tuberculosis in Asia, though there is little evidence that this particular complication occurs with greater frequency in Asians than in Europeans. Let us admit, however, that any original work on any aspect of tuberculosis among Asians, provided that it is soundly based, merits careful consideration, especially by workers in that field in Asia.

The steamy, enervating, tropical climate of Southern Malaya is not conducive to any sustained effort, and Dr. Barnsby must be given full marks for the energy and enthusiasm she has displayed in a very thorough study by patient observation of this important complication, though she herself is compelled to admit, towards the close, that tuberculous bronchitis "may not exist as an isolated entity". Stepping well beyond her title, she gives us chapters on incidence, histology, pathogenesis, symptoms and radiological appearances, before concluding with a consideration of the effects of drugs and other treatment on bronchial lesions and on the cavitation with which they are often associated. Each is introduced with a careful presentation of other studies on this subject, and there is an ample bibliography at the close.

Actually, her treatment boils down to nothing new, but on one aspect great reliance is placed. This is the so-called postural retention (now better named postural reduction) for cavity closure, introduced by Dillwyn Thomas. On the grounds of experience we are prepared to endorse the value of this, though not going so far as

to agree that it is "more important than drugs in producing cavity closure". Dr. Barsby's results (by drug therapy of accepted routine types, sometimes augmented by mechanical means, such as postural reduction and pneumoperitoneum, "to ensure that a cavity will not re-open") appear impressive; but the figures are too few to be statistically significant, at least as regards the advantage of one régime over another. There are some loose statements—such as "new drugs are being given a trial every day"—and some naïve ones—"Most oriental patients like to avoid surgery" (who but a psychopath does not?), and smoking, whenever possible, must be "prohibited"; but with her conclusions in general, no one should cavil.

The book is pleasantly diversified, if not strengthened, by chapters from some of the author's team. Thus her husband, a surgeon, gives his results on 65 thoracoplasties with only three deaths, and 58 cases regarded as "healed"—excellent figures, though his statement that "cases suitable for resection were not frequently encountered" is, to Western observers, a surprising one. Her almoner gives valuable information on the social and environmental background of Malayans.

The format of this slender volume is attractive, and it has frequent sub-headings and good photomicrographs and reproductions of X-ray pictures. It is a thesis which could be perused with profit by all interested in tuberculosis, and it should be compulsory reading for all workers in Asian countries—if only to demonstrate what can be achieved under disadvantages of climate and environment by sustained patience and endeavour.

The Nursing and Management of Skin Diseases. By D. S. Wilkinson, M.D., M.R.C.P.; 1959. London: Faber and Faber. 8½" × 5¼", pp. 288, wth many illustrations. *Price: 32s. (English).*

THE author explains in the preface his reasons for adding one more book of dermatology to the already imposing number of these publications. He insists that his book is a supplementary handbook to the more formal texts, and as such it is an excellent example. Detailed descriptions, big words and diagnostic minutiæ are omitted, and this makes the work refreshing and easy to follow and understand. Nurses, medical students and general practitioners will appreciate its clarity and complete common sense. The specialist dermatologist also would do well to read it. The great need for sustained interest and patience in the nursing of skin patients makes it almost essential that the nurse in charge of them be a specialist. She must have these qualities and be gifted with the insight to understand the conflicts that plague so many victims of neurodermatitis and other psychosomatic dermatoses. She must be capable of explaining the fundamentals of a patient's dermatosis, and be prepared to encourage him and to be cheerful at certain times or serious and reflective at others. It is necessary for her to stress that the dermatosis is only another disease, mostly not contagious and mostly relievable, often curable. The author makes these points very ably.

The book is arranged in five parts, each divided into a number of chapters. There are five appendices at the end, with the index and a brief but adequate bibliography. The appendices include formulary, principles and techniques of dressing and bandaging and a description of the dermatological out-patient department.

The introductory chapter on the anatomy and physiology of the skin and the role of heredity in skin diseases is most worthwhile. The explanation of the mechanism of development of tension in psychosomatic dermatosis is very clearly stated. The author holds that most people who suffer from such dermatoses eventually resolve their conflicts, with healing of their rash. This is the experience of most dermatologists interested in psychosomatic skin diseases. Alas, there are some who even today deny the important role of the psyche in the ætiology of certain skin diseases!

The author is at pains to warn his readers of the dangers of the indiscriminate local use of antibiotics, such as "Chloromycetin", "Aureomycin" and penicillin, and of the resistance of pyogenic organisms to penicillin. Antihistamines must also be used wisely—their hypnotic effect is unreliable and unpredictable, and their action is negligible in eczema, in which the reaction is fixed in the skin. Such statements are in keeping with the whole tenor of this common-sense treatise. Likewise, the indiscriminate local use of hydrocortisone is indefensible when no accurate diagnosis has been made. One could liken its use in this manner to that of morphine in undiagnosed surgical emergencies.

Altogether Dr. Wilkinson has produced a most readable and worthwhile supplementary handbook of skin disorders and their management. It is our opinion that the book attains a level of excellence rarely equalled in dermatological books of this description.

Books Received.

[The mention of a book in this column does not imply that no review will appear in a subsequent issue.]

"Gynæcomastia", by Peter F. Hall, M.D. (Sydney), M.R.A.C.P., M.R.C.P., with a foreword by P. M. F. Bishop, M.D., F.R.C.P.; Monographs of the Federal Council of the British Medical Association in Australia, Number 2; 1959. Sydney: The Australasian Medical Publishing Company Limited. 9¾" × 7", pp. 158, with 24 illustrations. Price: 35s.

A comprehensive treatment of the subject based on a thesis prepared at Guy's Hospital between 1952 and 1955.

"The Principles of Humane Experimental Technique", by W. M. S. Russell and R. L. Burch; 1959. London: Methuen & Co. Limited. 8½" × 5¼", pp. 252. Price: 30s. (English).

Contains a full descriptive account of animal experimentation in Britain with a discussion of the main modes of making experiment more humane and efficient.

"Papers and Proceedings of the Royal Society of Tasmania", edited by W. Bryden, Volume 93; 1959. Hobart: The Royal Society of Tasmania. 9¾" × 7", pp. 192, with illustrations. Price not stated.

Contains the annual report of the Royal Society of Tasmania for the year 1958 and 17 papers.

"Psychopharmaca: A Bibliography of Psychopharmacology, 1952-1957", by Anne E. Caldwell, M.D., 1958. Washington: United States Government Printing Office. 10¼" × 8", pp. 260. Price: $1.50.

Compiled by the National Library of Medicine at the request of the Psychopharmacology Service Center of the National Institute of Mental Health, Bethesda, Maryland.

"A Synopsis of Anæsthesia", by J. Alfred Lee, M.R.C.S., L.R.C.P., M.M.S.A., F.F.A.R.C.S., D.A.; Fourth Edition; 1959. Bristol: John Wright & Sons, Limited. 7¼" × 4½", pp. 616, with 69 illustrations. *Price: 27s. 6d. (English).*

Completely revised since the previous edition appeared in 1953.

"Inborn Errors of Metabolism", by David Yi-Yung Hsia, *M.D.; 1959. Chicago:* The Year Book Publishers, Incorporated. Sydney: W. Ramsay (Surgical) *Limited. 9" x 5½",* pp. 260, with 57 illustrations, 69 charts and 5 tables. Price: £5 4s. 6d.

Intended primarily for the general medical reader.

"The Medical Clinics of North America", May, 1959, Vol. 43, Number 3. "Diseases of the Skin", edited by Marion B. Sulzberger, M.D., F.A.C.P. Philadelphia and London: *W. B. Saunders Company.* Sydney: W. Ramsay (Surgical) Limited. 8¾" × 5½", pp. *633-968, with 161 illustrations.* Price (6 issues per annum): paper binding, £6 15s.; cloth binding, £8 2s. 6d.

Contains 21 articles on various aspects of modern dermatology.

"The Surgical Clinics of North America", April, 1959. Vol. 39, Number 2; "Symposium on Reconstructive Plastic *Surgery", edited by* John Marquis Converse, M.D. Philadelphia and London: *W. B. Saunders Company.* Sydney: W. Ramsay (Surgical) Limited. 8¾" × 5½", pp. 574, with 145 illustrations. Price (per annum): cloth *binding: £8 2s. 6d. Paper: £6 15s. (6 issues).*

Contains 16 articles on various aspects of plastic surgery and one article on inguinal hernia.

"Notification of Communicable Diseases: A Survey of *Existing Legislation",* World Health Organization; Offprint from Vol. 9, No. 4, of the *International Digest of Health* Legislation. Geneva: World Health Organization. 9½" × 6", *pp.* 51. Price: 3s. 6d., $0.70, Sw. Fr. 2.

A review of the related legislation in about 50 countries.

The Medical Journal of Australia

SATURDAY, DECEMBER 12, 1959.

MEDICAL EDUCATION AND THE PRACTISING MEDICAL PROFESSION.

MEDICAL EDUCATION is claiming a lot of attention at present. Certain aspects of the subject are dealt with in the main group of papers appearing in this issue, and we have taken the opportunity of including contributions not only by leaders in medicine but also by medical undergraduates. As a modified medical education number we hope that this issue will stimulate the practising medical profession as well as others to think more about what is a vital topical subject. Undoubtedly the most significant happening in the field of medical education for some time has been the successful Second World Conference on Medical Education recently held in Chicago under the auspices of the World Medical Association. The First World Conference, which was held in London in 1953, brought forward a mass of valuable material, which was subsequently published and should be at the elbows of all who are planning or carrying on programmes of medical education—and, perhaps even more, of those who make suggestions and criticisms from the comfortable seclusion of editorial and other such chairs. The papers from the Second World Conference that have already been published in the *British Medical Journal* of September 5, 1959, indicate that the conference was one to take serious notice of. With the emphasis on post-graduate medical education, its proceedings when published should be an invaluable, perhaps unique, guide to current informed thought on a rather neglected subject.

The World Medical Association, still barely a teenager as organizations go, has put not just medical educators or the medical world but mankind in its debt, with these two signal contributions to the training of doctors. It is most encouraging that such a lead should be coming from a body which represents and is composed of the various national medical associations throughout the world. There is every reason why the practising medical profession should be interested in all phases of medical education and should be in a position to make a constructive contribution to its planning and application. We hope that it will claim the ever-increasing attention of the British Medical Association in Australia, as the Association undoubtedly has much to offer to this vital and swiftly-expanding aspect of our national development. The New South Wales Branch of the Association performed an important service when last year it published Part I of its Report on Medical Education. The mere fact that this was virtually ignored by the politicians of the moment is no ground for discouragement. It has permanent value and with Part II, which is yet to be published, may well be consulted for further planning ideas in the future, when the present bungle over the medical school in the University of New South Wales has been reduced to order and the school has found its feet, as we all hope it will before long. There will still be room for a third school, at least, in New South Wales.

It is painfully obvious that Victoria needs at least one more medical school and that all possible speed should be shown in the Monash University project. Indeed, it seems that something will have to be done immediately to train more medical students if a serious medical situation is not to develop in Victoria. We hope that in this respect careful attention will be paid to the forthright and informed discussion of the problem and its solution in Sir Albert Coates's Syme Memorial Lecture published in this issue (see page 873). Here again it is encouraging to note that the Victorian Branch of the B.M.A. is taking a positive interest in the matter and has done so for a long time, thus giving the lie, as Sir Albert Coates so rightly points out, to those misinformed laymen who accuse the organized medical profession of keeping a close preserve and favouring limitation of entry to the course. The B.M.A. has a legitimate concern for the welfare of its members and indeed has a duty to protect their reasonable interests, but it is not confined to this. Amongst other matters, it is sincerely and zealously concerned with the standard of medicine, as it is taught to the medical student and to the doctor, and as it is brought to the public by the practitioner. The cultivation of close relationships between the Association and those responsible for medical education in all its aspects must make for better medicine.

THE EVER-GROWING CURRICULUM.

IN the Middle Ages a scholar was prepared to accept all knowledge as his province, and even in the early days of the Royal Society its members ranged widely over the field of contemporary "natural knowledge" with reasonable hope of being fully and authoritatively informed. Since those days knowledge has increased far beyond the capacity of any one man's mind, and we have had to become reconciled and adjusted to ever-increasing specialization. In all fields of activity this has its drawbacks and certainly raises the question of what is to be the definition of an educated person in the modern world, but in medicine it poses a particular dilemma. However scientific and exact medical knowledge may become, medical practice is still, and surely must always be, more than anything else a matter of human approach. Cultivation of the attitude of mind and breadth of knowledge necessary for this is not always easily

reconciled with intense specialization. After graduation a compromise is usually reached in some way or other, and the matter is in the hands of the individual doctor. The undergraduate, however, has no alternative but to attempt to cope with the inexorably accumulating mass of facts and ideas presented to him. On the one hand he is told that he must be a cultivated gentleman with a knowledge of the humanities. On the other he is faced, first of all, with teaching in the basic sciences by those who are understandably more concerned with their own subject than with its direct application in the training of a doctor; then with the pre-clinical medical sciences, whose teachers, whether medically qualified or not, must find it difficult not to be academically single-eyed; and then with all of general medicine and surgery with the basic fundamentals of pathology, bacteriology, pharmacology and the like clamouring for attention at one end of the stage, and at the other the many enthusiastic clinical specialists anxious to impress details of their specialities. We may well ask how far a student with an average brain can be expected to cope with all this and finish up with a sound and sufficient knowledge of medicine, such that he will be able to go out and get on with the essential business of his calling, the everyday care of his fellow men and women.

This dilemma has of course been widely discussed, and has, we know, seriously exercised the minds of many experienced medical educators. However, it needs to be constantly borne in mind, as every year the problem grows more difficult, and we wonder if in practice, despite the best of intentions, very much is being done about it. It was brought strongly to mind recently by receipt of a letter from a distinguished former medical teacher, now long since retired from his chair in one of our older medical schools. In it he said that he had been attending a medical conference and had bought a copy of a well known American publication designed as a handbook for physicians. It contained 488 pages heavily packed with factual matter of medical importance. He commented that he could not assert that any one topic was given undue emphasis or that any one detail was not of value in the work which a physician must carry out, but he was staggered at the enormous volume of information which the unfortunate medical student was expected to assimilate today. Then, he supposed, surgery and also obstetrics plus gynæcology had similar books dealing with multitudinous facts which must be conned. The writer of this letter is one who still retains a life-long thirst for knowledge of all kinds; so it is significant when he writes: "The mind of the student is incapable of covering all this ground." He suggests certain possibilities which may afford some relief. The first is that each year some three or four particular aspects of a subject might be chosen for detailed study, surmounting a general review of the whole subject. The examination could be arranged to suit each of the three choices. The great objection to this device would be, as he points out, that it might encourage too early specialization; but it surely has merit in relation to the pre-medical sciences, and may indeed, by thinning out the trees, enable the student to see the wood more clearly.

The second suggestion is that in each examination the candidate should be required to answer, say, five or six questions only out of 12 to 15 questions, possibly with some obligatory questions included. The suggestion here is that, as the student's comprehension and memory must of a certainty be unequally spread over the whole field, such a choice would give some chance of showing his standing in the sections of work that he liked. It might readily be objected that this would lead to complete neglect of certain subjects, the student concentrating on what happened to suit him, but this objection does not meet the difficulty that it is becoming impossible for the student to cover all the ground in any case. The last suggestion of our correspondent is that it be admitted frankly that specialist standard cannot be expected in a pass examination for each department of a subject and that therefore the examination might be devised to cover important principles, avoiding specialist detail. This may well be the answer for certain subjects at least. No one will question the importance of a sound basic knowledge, particularly as it applies in the coordinated building up of the student's total medical knowledge. It would surely be far better to concentrate on ensuring that he does grasp these basic principles, to the complete exclusion, if necessary, of a good deal else—for example, the multitude of facts and figures which at best he only retains on the surface of his brain long enough to brush them off on to the examination paper, and the variety of theories and recent developments which, however much they may fascinate his teacher, have little if any relevance to his total needs. We know that there are thoughtful medical teachers in our midst who are genuinely trying to find a way in which to unload a great deal of the detail from the medical curriculum, and at the same time to include in it such general material as will help to develop the student's mind and train him to think and to learn for himself. *Floreant!*

Current Comment.

LANGUAGE.

THE question of a universal language (apart from that of love, which has been known since man appeared upon this planet) is always one of great interest. Over the years a number of solutions have been put forward; but none of the synthetic languages proposed has received unqualified support. Many people still prefer to spend much time acquiring a working knowledge of a national language, rather than devote themselves to learning one, no matter how logical, that has been artificially produced.

In an interesting short account of the development of the different tongues with which the world is blessed, A. Plichet[1] quotes an observation by Charles V, which throws rather a different light on the problem. It was his opinion that man should speak to God in Spanish, to his beloved in Italian, to girls in Portuguese, to his friends in French, to the troops in German, to geese in English (England being at that time his sworn foe), to doves in Swedish, to horses in Hungarian and to the Devil in Czech. This is a formidable list indeed; it would be far simpler (though less picturesque) to use

[1] *Presse méd.*, 1959, 67: 1335 (June 27).

Esperanto or Interlingua for all these purposes. However, what seems to be actually happening is that most languages are borrowing unashamedly from each other, with some rather curious results. A short reference to this matter was made in the editorial columns of this Journal a few months ago,[3] in relation to medical and scientific literature. Attention was drawn to the many pitfalls awaiting the translator, and the recommendations made by H. Van Hoof[4] for their avoidance were quoted. Plichet concludes his short article on language as follows:

> French, because of the subtlety and suppleness of its syntax, was in the eighteenth and nineteenth centuries considered the only diplomatic language capable of expressing all the necessary shades of meaning. But those were cultured and civilized times, which were not under the domination of the dollar or of the uncompromising "niet".
>
> Perhaps if French was brought back into fashion, the nations of the world would more easily discover means of achieving mutual understanding.

No one will dispute the grace and exactness of the French language as used by one who understands and respects it; but it is a living language, subject like all others to the many influences that are at work in this age of rapid change. Moreover, it would be inappropriate in this place to discuss the language of diplomacy. Let us, however, at least hope that the way in which living languages are, in the medical and scientific (and presumably other) fields, more and more making use of words borrowed among themselves, may in some way foreshadow a growing spirit of cooperation and mutual understanding among the nations.

"FREEDOM SLEEVES."

IT is often necessary to restrain the arms of a child so that he cannot remove a dressing, scratch an irritable lesion, touch an infected area, remove a gastric tube and so on. It is an unhappy business as a rule and can cause the child much distress; so anything that will make it more tolerable while remaining effective is welcome. To this end Miss Grace J. Adam[1] has devised what are known as "Freedom Sleeves". These have been used successfully on a number of selected private patients in Wade House—children suffering from infantile eczema with pneumonia or with secondary staphylococcal infection, from discharging ears with an infected face, and from an infected face in a case of prolonged jaundice with accompanying itchiness. In the Royal Alexandra Hospital for Children "Freedom Sleeves" are stated to have been satisfactory in preventing the removal of an intragastric tube by a child with caustic soda burns of the œsophagus and also in controlling a child with facial infection and another with mental degeneration who was plucking at his face. The Lorna Hodgkinson Sunshine Home for sub-normal children reports the successful use of "Freedom Sleeves" in two cases, to prevent head-banging and self-inflicted damage and to prevent hands being put down the throat to induce vomiting. The sleeves are made of moulded polythene and fit a child to the age of about two years. They are jointed at the elbows to allow the natural flexion of the arms and laced to form loose-fitting and very well ventilated sleeves. They are soft and pliable, so the small child can take falls with little fear of injury to the arm or clavicle. They allow the child complete freedom of shoulders and wrist but will not allow him to touch his face with his hands. If more severe restraint is needed, the sleeves may be tethered to the waist or the side of the cot without ties on the child's wrist. In her article, which is fully illustrated, Miss Adam explains in detail how the sleeves are fitted, used and cared for. They appear to be thoroughly practical and useful and will be welcomed by those who are concerned about the problem of restraining small patients.

[3] MED. J. AUST., 1959, 1: 673 (May 16).
[4] *Presse méd., 1959, 67: 419 (February 28).*
[1] *Aust. Nurses' J., 1959, 57: 230 (September).*

MYOFASCIAL PAIN SYNDROMES ("FIBROSITIS").

As the climate of medical opinion fluctuates, orthodox views about the commonest disorders are subject to confusing variations. Ten years ago "fibrositis" was commonly diagnosed; today the term is out of fashion. During the past few years authors have employed a number of different terms to describe what is essentially the same disorder. Irvin Neufeld[1] states that "the poor reputation which the term fibrositis has earned in professional circles is matched only by its frequency in clinical practice". As a preferable term he suggests "fibropathic syndromes". In a further article Neufeld[2] has given a convincing description of the part played in the genesis of soft-tissue pain by somatic nervous reflexes. F. L. Reichert[3] advises deep injection of local anæsthetics for the relief of somatic pain. So also does R. R. Gutstein,[4] who calls the syndrome "myodysneuria". R. J. Dittrich[5] does not use a special name for soft tissue lesions which cause pain in the back. He states that a spot in the latissimus dorsi is responsible for pain referred to the shoulder, and a spot low in the sacro-spinalis causes low-back pain. Both are reported to be amenable to cure with procaine injections.

A. E. Sola and R. L. Williams,[6] in an illuminating article, have demonstrated the importance of myofascial pain syndromes. They claim that the effects of saline injections are as good as the effects of procaine. H. Warren Crowe[7] has lately written about pains which radiate from focal pain points and which may be relieved with procaine injections. Langdon Parsons[8] has pointed out that pelvic pains often originate at extragenital sites; they are more frequently somatic than visceral in origin. Doris M. Baker[9,10] emphasizes that a great deal of rheumatic pain comes from changes in the corium and the subcutaneous tissues. She states that the term "panniculitis" is unsuitable because there is no inflammatory change; she suggests instead "panniculosis". Hugh Burt[11] has written about the reality of non-articular lesions in rheumatic disease, and the unwisdom of looking for psychiatric explanations. A. S. Freese[12] has recently discussed the part played by trigger mechanisms in the genesis of pain in head and neck; he finds procaine injections useful.

H. E. Coggleshall[13] agrees that the term "fibrositis" may be questioned by purists. Yet, he comments, regardless of the status of fibrositis as a disease, it becomes a necessary category to identify a large group of patients who have neither psychoneurosis nor rheumatoid arthritis. Jed H. Irvine[14] has recently written strongly in condemnation of the "ancient misconception" that fibrositic pains are not real. E. F. Rosenberg[15] states that most doctors encounter patients with this ailment during everyday work at a busy practice. Nearly every muscular and articular region of the body may be affected, and the resulting symptoms vary in severity from mild aching to a completely disabling and violently painful illness. Rosenberg believes that the term "fibrositis" should not be abandoned. Whatever the specialists in this field may think about it, the bulk of the medical profession will probably agree with Rosenberg.

[1] *Geriatrics, 1955, 10: 318 (July).*
[2] *Arch. phys. Med., 1955, 36: 759 (December).*
[3] *Amer. J. Surg., 1956, 91: 699. (April).*
[4] *Amer. Practit., 1955, 6: 570 (April).*
[5] *Brit. J. phys. Med., 1957, 20: 233 (October).*
[6] *Neurology, 1956, 6: 91 (February).*
[7] *Rheumatism, 1958, 14: 75 (July).*
[8] *Postgrad. Med., 1958, 23: 252 (March).*
[9] *Ann. rheum. Dis., 1955, 14: 385 (December).*
[10] *Med. Press, 1958, 239: 552;* (in *Int. abstr. Surg., 1959, 108: 308* (March)).
[11] *Proc. roy. Soc. Med., 1958, 51: 255 (April).*
[12] *N.Y. St. J. Med., 1959, 59: 2554 (July).*
[13] *Med. Clin. N. Amer., 1958, 42: 1603 (November).*
[14] *Arth. & Rheum., 1959, 2: 188 (April).*
[15] *Med. Clin. N. Amer., 1958, 42: 1613 (November).*

Abstracts from Medical Literature.

HYGIENE.

Alternatives to Fluoridation of Water Supplies.

In an editorial article (*Publ. Hlth Rep. (Wash.)*, June, 1959) statements by various authorities are presented on alternative methods to fluoridation of water supplies to increase fluorine in the diet. The vehicles discussed are tablets, bottled water, milk, bread and salt In a summary it is stated that the most important seem to be milk, table salt and fluoride tablets, which are now all being tested. Milk might be a possible alternative vehicle in countries with a universal milk consumption by the children, while salt might be possible for regions with a low or irregular milk consumption. At present, the value of milk and salt for fluoride administration cannot be compared with that of drinking water, since the evidence in favour of the first two vehicles is incomplete; in particular, there is a total lack of clinical evidence of their effectiveness. On the other hand, tablets have been shown to have some positive effect, although the experiments with tablets have been performed for a much shorter time and on a much smaller scale than drinking water fluoridation. If the effectiveness, practicability, and safety of application of these methods can be satisfactorily demonstrated, they may become very valuable in regions where water fluoridation is impossible.

Corthion Intoxication.

T. OZGEN (*Presse méd.*, April 4, 1959) reports 15 cases of intoxication with corthion, a parathion derivative used as an insecticide; all but four were fatal. As corthion has a parasympathicomimetic action the author based his treatment on the administration of large doses of atropine. This enabled him to save four of the patients. He states that speed in treatment is essential, and a hopeful outlook should be maintained. Every therapeutic manœuvre should be employed, including artificial respiration. The plan of treatment is as follows: (i) Gastric lavage with plain water or, better, a solution of calcium bicarbonate, a small amount being left in the stomach. (ii) The administration of oxygen, if pulmonary symptoms, cyanosis, dyspnœa, or acute pulmonary œdema supervenes. (iii) Artificial respiration in an oxygen tent, if the patient has difficulty in breathing; morphine must not be used. (iv) The administration of atropine in large dosage—1 mg. or 2 mg. intravenously, 60 to 70 mg. intramuscularly. (v) Symptomatic treatment as required.

The Solubility of Red Lead Paint in Water.

D. FRASER AND L. T. FAIRHALL (*Publ. Hlth Rep. (Wash.)*, June, 1959) report the results of a study to determine experimentally the solubility of red lead, and the extent of dissolution of lead by water in contact with surfaces coated with red lead paint. Linseed oil, phenolic and vinyl based paints were used and the effects of a number of variables were investigated separately. The solubility of purified red lead in distilled water was found by analysis to be $8{\cdot}9 \times 10^{-7}$ gramme molecules of Pb_3O_4 per litre (0·553 p.p.m.) at room temperature. The uptake of lead by water standing in contact with oil base red lead paint varies with the length of time of contact. The amount of lead dissolved by water in contact with oil base red lead paint varies inversely with the time of drying of the paint film. Repeated immersion tests indicated that the leaching is partly a surface effect, and the dissolution of lead tends to approach a constant value. Sodium hydroxide up to 25 p.p.m. depresses the rate of solution of lead with all three types of paint. An increased hydrogen-ion concentration up to pH 4 causes a pronounced increase in the rate at which lead is dissolved from the oil base paint as well as from the phenolic and vinyl base paints. The nature of the material painted did not affect the lead solubility provided that no free metal was in contact with the water. Results obtained with water samples from eight localities, differing widely in chemical characteristics, indicated that such characteristics have a profound effect on the rate of solution of red lead from paint film. Of the three paints tested, the oil base paint was at least 10 times more soluble under the conditions of the test than either the phenolic or vinyl base paints.

Accident Prevention in Childhood.

J. L. GODDARD (*Publ. Hlth Rep. (Wash.)*, June, 1959) discusses, with the aid of diagrams and tables, accidents to children in countries of the American Continent where current trends suggest that accidents will, within the next two decades, be the leading cause of death in children aged between one and 15 years. Hazards vary in importance from country to country, but each must be identified and prevented. Motor vehicle accidents, drowning, burns, poisoning, falls, and bites of insects and snakes are leading causes of accidental death. With significant exceptions, boys have more accidents than girls. More than one-half the accidental poisoning cases occur under two years of age, the toxins varying from country to country. United States National Health Survey data indicate that 45% of all accidental injuries occur in the home. The importance of accurate recording systems in accident studies is stressed, the technique of such studies is discussed, and some comments are offered on methods of accident prevention.

Occupational Lung Cancer.

R. DOLL (*Brit. J. industr. Med.*, July, 1959) refers to the study of occupational factors among patients with lung cancer as a source of knowledge of the biological relationship between exposure to carcinogens and the development of cancer. Radioactivity was first recognized as being associated with a high incidence of lung cancer among the miners of Schneeberg, where ore with high radioactivity is mined. The only form of occupational lung cancer described as an occupational disease in Great Britain is that which occurs among men employed in south Wales, where the nickel carbonyl process of nickel refining is used. Statistical studies of deaths among men employed there showed that 16 deaths from lung cancer and 11 from cancer of the nose had occurred when the expected numbers were one and less than one respectively. Nickel in powdered form has been shown to be capable of producing sarcoma in rats. It has also produced adenomatoid changes in the lungs of rats and guinea-pigs. Statistical investigation of deaths from lung cancer among workers employed in chromate manufacture shows that the death rate for this condition in this group in Great Britain and in the U.S.A. is many times the "normal" death rate. The pure carcinogenic agent responsible for lung cancer in chromate workers has not been isolated. Some workers suggest that it is trivalent chromium in the form of an acid-soluble, water-insoluble compound. With regard to asbestos as a cause of lung cancer, animal experiments have given negative results; however, the author considers it reasonable to conclude that exposure to asbestos dust gives rise to cancer, but that the circumstances in which it will do so have not yet been defined. Products of combustion and distillation of coal contain carcinogens capable of producing skin cancer. Evidence from Japan, Canada and Great Britain suggests that they may also cause lung cancer. Other substances suspected of being the cause of cancer are arsenic, iron, isopropyl oil and beryllium. The author considers it most unlikely that all existing risks have been discovered. New materials and new processes are being introduced into industry almost daily, and there is no reason to suppose that they will necessarily all be free from risk. It may be expected that industrial studies will continue, as in the past, to make important advances in our knowledge of all aspects of carcinogenesis. In this respect, detailed studies of the relationship between exposure, incidence and duration of latent period may be of particular value.

Protection against Radiological and Biological Aerosols.

H. GUYTON *et alii* (*A.M.A. Arch. industr. Hlth*, August, 1959) performed a series of tests to determine the value of items commonly found in the home as emergency respiratory protective devices in the event of sudden radiological or biological attack. The test aerosol consisted of particles, 95% of which were between 1μ and 5μ in size, and which contained spores of *Bacillus subtilis* var. *niger*. Eighteen variations of eight household and personal items were tested with human subjects. Five variations of these items were found to have a filtration efficiency greater than 85%. They were as follows: a man's cotton handkerchief folded to a thickness of 16 layers, folded to a thickness of eight layers, or placed over the mouth in a crumpled state; a commercially available toilet paper, when used in a thickness of three sheets; a bath towel, when folded in two layers. However, the high resistance of the handkerchief when folded to give 16 layers and when crumpled limits the usage of these two variations to short intervals of time. In order to determine whether wet items were superior to dry items, five of the cloth materials were

tested after being saturated with water and subsequently hand-wrung. The most efficient of these items was found to be the bath towel (70·2%). This result is less than that obtained for seven dry items. Four of the five wet items exhibited extremely high resistance to breathing. Therefore, the use of wet items as respiratory protective expedients appears impracticable.

Synergistic Effects of Aerosols.

C. LABELLE AND H. BRIEGER (*A.M.A. Arch. industr. Hlth*, August, 1959) studied the results of retention in the lungs and elimination of particulates from the lungs of rats. The rates of elimination were found to vary widely, from approximately one hour for metallic iron particles to five months for beryllium sulphate. A part, but not all, of this variation is associated with differences in particle size, large particles in general being expelled more rapidly than small particles. Particulates reaching the lung in very small amounts may be retained in the lung for unexpectedly long periods. This is likely to be true of the particulates present in the general atmosphere as a result of smog or fall-out. Predictions as to the effect of smog or fall-out which are based on analogies with industrial experience may be misleading, since industrial dust levels are commonly adequate to stimulate elimination by phagocyte production. The simultaneous administration of inert dust can accelerate the expulsion of biologically active particles from the lung when the latter are present in very small amounts. The greater lung burden increases the release of phagocytes. The authors consider that natural effective decontamination procedures have not been developed for the lung itself, where the hazard of inhaled particles is perhaps greatest, but they suggest that the synergistic stimulation of phagocytes by inert particles may permit therapeutic decontamination of a lung.

PATHOLOGY.

Cytology of Tumours of the Salivary Glands.

A. APPAIX *et alii* (*Presse méd.*, March 25, 1959) describe a new procedure for the diagnosis of tumours of the salivary glands—cytology with a fine needle. They state that the technique is simple and can be carried out on ambulatory patients, and that it causes only slight discomfort. It has no disadvantages and no contraindications, and is suitable for children as well as adult patients. It usually makes it possible to avoid biopsy, which has a number of disadvantages. The puncture is made with a very fine needle (two-tenths or three-tenths of a millimetre), in a very tight syringe of a capacity of 2 ml. The needle and syringe are withdrawn together, and the material is ejected on to a slide, spread with a cover-slip, and fixed in alcohol-ether (equal parts). The fixative must be very pure. Staining is carried out by Papanicolaou's method, with the use of Harris-Shorr stain. The authors describe the cytological appearances found, and give the results of 24 tests, all confirmed by examination of the operative specimen. Most of the growths were mixed tumours. In every instance the diagnosis of tumour was correct. Only four slight errors were made: twice the tumour was stated to be a mixed tumour when it actually proved to be a cystadenolymphoma, and twice it was stated to be a simple mixed tumour when it proved to be a mixed tumour with epitheliomatous elements. The authors stress the importance of close collaboration between the cytologist and the clinician, the necessity for the former to be absolutely familiar with this type of examination, and the value of biopsy during the operation in doubtful cases.

Eosinophilic Lung.

T. J. DANARAJ (*A.M.A. Arch. Path.*, May, 1959) has reported the necropsy study in a case of a Ceylonese man who died of encephalopathy after treatment for eosinophilic lung with neoarsphenamine. The significant histological finding was the presence of foreign-body granulomata in the lungs. There had been a series of liver biopsies in which no granulomata had been seen, but there had been periportal leucocytic infiltrations similar to those the author had seen from patients with filariasis. In this case filariasis was not demonstrated.

Pulmonary Hæmorrhage with Glomerulonephritis.

R. H. HEPTINSTALL AND M. V. SALMON (*J. clin. Path.*, May, 1959) have described three cases of necrotizing glomerulonephritis associated with gross hæmorrhage into the lungs. In all there were extensive glomerular lesions, acute in two and chronic, with evidence of recent activity, in the third. In two of the cases there were repeated hæmoptyses, whilst in the other overt hæmoptysis occurred only during the last few days of life. The pulmonary lesions resembled closely those of idiopathic pulmonary hæmosiderosis in which the incidence of renal involvement is high. In all cases there were abdominal discomfort, dyspnœa, profound anæmia, hæmoptysis and evidence of renal failure. In one case there was necrotizing arteritis which, together with the necrotizing glomerular lesions, suggests that the syndrome overlaps with polyarteritis nodosa.

Cellular Inclusions in Gargoylism.

M. LAMY, P. ROYER AND C. NEZELOF (*Presse méd.*, May 27, 1959) present three cases of gargoylism of recessive autosomal type in children. Two of the children were brothers; their parents were not consanguineous, but were not young. Inclusions of two types were found in the bone marrow of all three subjects. The first type comprised large granulations, which were found in the cytoplasm of the histiocytes. The second type, which might be granular, linear or annular, was found in the cytoplasmic vacuoles of the plasmocytes. It was not possible to clarify the nature of these deposits by staining.

Structure of Pulmonary Trunk in Pulmonary Hypertension.

D. HEATH *et alii* (*J. Path. Bact.*, April, 1959) have studied the configuration of the elastic component of the media of the pulmonary arterial trunk in a number of conditions associated with pulmonary hypertension. They found that in the normal person the form and arrangement of the elastic tissue of an artery are closely related to the intravascular pressure. When this is high, as in the aorta, the fibrils are long, uniform and arranged circumferentially, parallel to one another. When the pressure is low, as in the normal pulmonary artery after birth, the fibrils become short and irregular in shape and distribution. In patients with congenital heart disease associated with pulmonary hypertension, the configuration of the elastica remains of the aortic type, as in the fœtal state. In heart disease with acquired pulmonary hypertension, the pulmonary artery shows normal adult configuration of the elastica.

Tumours after "Thorotrast".

D. L. GARDNER AND R. F. OGILVIE (*J. Path. Bact.*, July, 1959) have described two cases in which the injection of "Thorotrast" for contrast cerebral angiography was followed after many years by the development of fatal new growths. In the first, angiography was performed 15 years before death. Thrombocytopenic purpura developed in association with giant follicular lymphoma. "Thorotrast" deposits, shown to be active alpha-particle emitters, were demonstrated in relation to many of the hyperplastic lymphoid-cell aggregates, and among the excess fibrous tissue of the portal tracts in the liver. In the second case, radioactive "Thorotrast" deposits accompanied the presence of a well-differentiated bile-duct carcinoma arising apparently in the left hepatic duct. Angiography had been performed 22 years previously, and chance operation four years before death revealed the presence of hepatic cirrhosis. Although it seems likely that in both instances "Thorotrast" behaved as a carcinogen, it is emphasized that proof of its carcinogenicity in human tissue may be difficult to obtain. Ultimately a controlled retrospective analysis of the incidence and form of neoplasia in all patients to whom "Thorotrast" has been given appears to offer the best hope of providing statistically acceptable evidence on this point.

Changes in the Liver with Extrahepatic Cholestasis.

R. G. SHORTER AND A. H. BAGGENSTOSS (*Amer. J. clin. Path.*, July, 1959), in a series of three papers, have studied the effect upon the liver of extrahepatic cholestasis in humans. They found that fibroblastic activity could be recognized as early as the second day of jaundice, and was present in all cases studied up to the seventh day. Necrosis of hepatic cells was seen in the first seven days of jaundice, and the cells affected were situated both in the centres of lobules and in the periportal zones. The first formation of nodules of regenerating hepatic cells was seen in a sample of liver stained 212 days after the onset of jaundice, and established cirrhosis was seen at 400 days and subsequently. Changes in bile ducts and ductules seemed to follow no definite chronological pattern. The authors conclude that biliary cirrhosis can occur in the presence of obstruction even without any superadded infection.

Points of View.

ON COLPOSCOPY: ITS THREE IMPEDIMENTS, ITS FIVE VIRTUES, AND THE ONE WAY OF RECONCILIATION.

COLPOSCOPY is not a new method. It was first described as long ago as 1925 by Hinselmann. New on this continent, apart from Coppleson's article, there is no mention of it in Australian medical literature. One can quote numerous instances of regionalism or scientific nationalism in medicine apart from the use or non-use of colposcopy, which is a method commonly used in Europe today, but practically nowhere else. A few centres in the United States of America, Japan and even Australia are the exceptions and not the rule. We have all heard of the popularity of cupping and the use of counter-irritants in French medicine; one knows of, or has read about, the use of tissue extracts in various forms as an accepted treatment for gerontological conditions by Russian physicians. These things have not leaped across the geographical boundaries, and maybe we have not lost anything by not being receptive to these techniques. Colposcopy's lack of spread in the English-speaking world cannot be explained by emotional factors or by differences in taste, temperament and natural philosophy, like our disinclination towards the application of leeches for sundry ailments.

Let us see the impediments in the way of colposcopy, in the right order. The method has been described in the German tongue, and textbooks, articles and atlases are written and published in German. Mestwerdt's book is the only one translated—and that into French—and is now unobtainable. The language barrier, although surmountable by knowing just enough German to read the captions in the atlas, is quite a real one for those with linguistic prejudice. May I say here that to know enough German to read this sort of publication, one requires only matriculation standard of German, with the colposcopic jargon thrown in, and that the enjoyment of, say, Goethe's "Faust" in the original, is not an indispensable prerequisite.

The second impediment is a much more serious one. To judge the condition of the cervical epithelium, one has to acquire experience, and one must necessarily learn from observations made in the course of hundreds of viewings. Hinselmann, the pioneer of colposcopy, spent many long years checking his observations histologically, later on also cytologically. These efforts go back some thirty years. One would be foolish to start where Hinselmann began, and not build from where he and his school left off and take advantage of the lessons that have already been learnt. To be able to interpret intelligently from the tissues seen through a cystoscope, bronchoscope or any other "scope", it is invaluable to have the guidance of someone with experience in the diagnostic procedure one is trying to acquire. This may mean travel abroad—an attraction rather than the opposite to the enterprising, although the destination for such travel may have to be a Continental centre, and the expenditure involved would not confer on the student any magic initials as the only tangible equivalent for time and money spent abroad.

The third impediment may be too pedestrian to deserve mention. However, I have heard it said repeatedly that the high expense of colposcopic equipment militates against its acceptance. It is rather facetious to put money value on even one carcinoma of the cervix which has been detected earlier than it would have been otherwise, or to express in man-hours how much is needed to detect one Stage 0 growth during the routine screening of hundreds of patients. Colposcopes cost no more than the modern up-to-date electrocardiograph or the simple diagnostic X-ray equipment used by country general practitioners in the outback. Just as a physician would feel his equipment deficient without an electrocardiograph, I cannot see how a gynæcologist could reconcile it with his conscience not to be able to use up-to-date equipment because of the expenditure involved. Greenhill's "Yearbook of Obstetrics and Gynecology" for 1958 mentions cost as a prohibitive factor, and quotes the sum of $1100 as the cost of equipment—a paltry sum for American earning capacity and money values in that wealthy country. It is stating the obvious to mention the necessity for a suitable gynæcological examination table with leg-rests. The gynæcological examination tables in most of our out-patient departments and in the consulting rooms of gynæcologists in this part of the world are unsuitable for colposcopy, as they have not the facilities for placing the patient in the lithotomy position. It is hard to break with tradition.

Colposcopy is one of the methods used in early cancer detection, and this is the point where the five virtues mentioned in the title of this article will be ennumerated and placed on their proper pedestals.

First, we have to mention the detection of abnormal epithelium on the cervix, such as leukoplakia, the atypical transformation zone, atypical blood vessels and the other forms of atypical pictures known and variously defined by the colposcopist. The atypical epithelium is the source from which the carcinoma develops. Hinselmann regards the removal of this epithelium as the main task; its detection is, however, not the end in itself. This kind of epithelium has to be eradicated.

Secondly, having detected and removed such epithelium, the colposcopist can chalk up the second virtue of his technique—the prevention of carcinoma of the cervix. Hinselmann describes this function in a picturesque simile. The prevention of cervical cancer is comparable to the eradication of typhus from civilized communities living under appropriate conditions of hygiene.

Thirdly, colposcopy has to be practised jointly and parallel with cytological examination and Schiller's test, of course with "aimed" biopsy for the purpose of histological examination. Colposcopy, cytology and histology overlap and complete each other by making tighter the mesh of the screen through which each patient has to pass. Screening at regular intervals by an examiner whose eyes are accustomed to viewing the cervix with 10 to 30 magnification, and to estimating the cervical pathological picture after treatment with acids and stains, is necessary.

Fourthly, every type of abnormal cervical epithelium will come under scrutiny and will have to be paired with its histological equivalent.

The fifth and last virtue of colposcopy is the one acknowledged by all the sceptics, and also by those whose experience is limited and judgement unsure. "One is compelled to inspect the cervix in bright light and with the examiner in a comfortable sitting position without having to crane one's neck." This is minimal praise, but still valid.

The accumulation of knowledge and skill brought about by the development of a technical advance has given rise more than once to new specialties in medicine. Colposcopy, with its avowed aim of cancer detection, is practised most successfully by teams which include cytologist, gynæcologist, pathologist and technicians as well. Whilst cytology is in many centres dominated by non-clinicians, colposcopy is the link that reconciles the impersonal cytological technique of cancer detection with the clinical approach, aiming at solving the same task.

Sometimes the cancer-screening efforts of clinicians are seemingly disparaged by statements, for example, that hundreds of man-hours, much money and great concentration of skill, zest and experience are used up to detect even a few growths in Stage 0, or an occasional invasive lesion. To this the obvious counter is, how much more time and effort is dissipated in appeasing the psychoneurotics, the anxious, the idle, and the person with an inadequate constitution to bear the burdens of everyday life! No doubt this latter work is also of primary importance. It is, however, a matter of personal inclination where one's preferences lie. I have already—unintentionally—declared mine.

G. S. SANTOW.

Sydney.

Medical Practice.

SECOND ANNUAL REPORT TO THE PRIME MINISTER BY THE NATIONAL RADIATION ADVISORY COMMITTEE, JULY, 1959.

1. INTRODUCTION.

1. The National Radiation Advisory Committee was appointed by the Commonwealth Government in May, 1957, to provide guidance on any matter pertaining to the effects of ionizing radiation on the Australian community. The Committee comprises: Professor Sir Macfarlane Burnet, O.M., F.R.S., F.A.A. (Chairman), Director, Walter and Eliza Hall Institute of Medical Research; Professor S. Sunderland, F.A.A. (Deputy Chairman), Dean of Faculty of Medicine, University of Melbourne; Professor J. P. Baxter, C.M.G., O.B.E., F.A.A., Chairman, Australian Atomic

Energy Commission; Mr. D. A. Gill, Chief, Division of Animal Health and Production, C.S.I.R.O.; Dr. W. P. Holman, Medical Director, Cancer Institute Board of Victoria; Professor Sir Leslie Martin, C.B.E., F.R.S., F.A.A., Chairman, Australian Universities Commission; Mr. D. J. Stevens, Director, Commonwealth X-Ray and Radium Laboratory; Professor E. W. Titterton, C.M.G., F.A.A., Professor of Nuclear Physics, Australian National University; Mr. J. R. Moroney (Secretary), Department of Supply. Mr. E. L. Cook, M.B.E., Assistant Secretary (Research and Development), Department of Supply, attended all meetings at the invitation of the Chairman. The Committee met on 10 occasions during the year under review.

2. Because of increasing personal commitments Sir Macfarlane Burnet has found it necessary to relinquish his position on the Committee. Members deeply regret the need for the resignation of their Chairman, who has contributed so much to the Committee since its inauguration.

3. In July, 1958, the Committee reported[1] to the Prime Minister on some radiation problems considered to be of particular importance to Australia; those to which the Committee paid special attention were: (*a*) the provision in Australia for the legislative control of the uses of ionizing radiation; (*b*) the uses of ionizing radiation in medical practice; and (*c*) radioactive fallout following nuclear weapon tests. The Committee has kept these three matters under review and reference is made to them again in the present report. Particular attention has been devoted to the assessment of the possible biological consequences to the Australian population of radioactive fallout.

4. This report should be read in conjunction with the first annual report,[1] which provides background information on the matters to be discussed.

2. Review of the Recommendations of the National Radiation Advisory Committee Contained in the First Annual Report, July, 1958.

(a) The Use of X Rays in Medical Practice.

5. The hazards of ionizing radiation have been widely publicized. On occasions the manner of their presentation has been such as to cause alarm. As a consequence it is possible that the medical use of X rays may be viewed with unnecessary apprehension by the public, with the danger that individual patients may come to harm through reluctance or refusal to undergo necessary X-ray examination. In this connexion the Committee stresses that the use of X radiation in medical practice is essential.

6. The Committee reaffirms the view stated in its first annual report that the medical use of X rays will remain the major man-made contributor to the radiation exposure of the Australian population if the great advantages to the community are not to be sacrificed. Many responsible authorities and informed users of X rays in medicine are known to be making efforts through administrative and technical measures to reduce this exposure to a minimum consistent with medical necessity. The Committee supports these efforts and strongly recommends their continued and more general application.

(i) *The Licensing of X-Ray Equipment for Use in Medical Diagnosis.*

7. The Medical Radiation Committee of the National Health and Medical Research Council has considered methods for limiting the radiation exposure of the population arising from the medical use of X rays. In accordance with the suggestion of the National Radiation Advisory Committee particular consideration was given to the licensing of equipment to be used in medical diagnosis.

8. The National Health and Medical Research Council has accepted its Medical Radiation Committee's recommendation that all X-ray equipment for use on man be registered, subject to its continuing compliance with prescribed technical standards, and that this requirement for registration be introduced into the model legislation approved by the Council. The National Radiation Advisory Committee strongly supports the action taken by the Council and recommends that all State Governments be urged to legislate accordingly.

(ii) *Programmes of Education in the Medical Use of X Rays.*

9. The Committee believes that the radiation exposure of the Australian population as a result of the medical use of X rays should be the minimum which is consistent with efficient medical practice. In this regard the Committee notes that the National Health and Medical Research Council will seek to have greater emphasis placed on this matter, both in medical and in auxiliary medical education in Australia. It is also noted that the Council itself will take steps to bring to the attention of users of X-ray equipment recommendations for minimizing radiation dosage during X-ray examinations. The Committee strongly supports the Council in its proposed action.

(b) Tuberculosis Case Finding Programmes Involving the Use of Mass Radiography.

10. The National Radiation Advisory Committee reaffirms its concurrence with the policy of the authorities in Australia concerned with the control of human tuberculosis, namely, to continue, with modern techniques and equipment, mass miniature radiographic surveys to meet the requirements of public health.

11. In this connexion, it should be noted that the United Kingdom Committee on Radiological Hazards to Patients has recently reported[2] on its study of mass miniature radiography used in the control of tuberculosis in the United Kingdom. That committee concluded that the practice is of great value and, when properly employed, makes a negligible contribution to the total radiation to which the population is exposed.

(c) Leukæmia: A Notifiable Disease.

12. In its first report[1] the Committee considered the controversial issue of the possible role of small doses of ionizing radiation in the causation of leukæmia. It was concluded that a factor or factors other than ionizing radiation appeared to be the major contributors to the incidence of leukæmia. In order to clarify the position it was recommended that all types of leukæmia should be declared notifiable. In November, 1959, The National Health and Medical Research Council endorsed this recommendation.

3. Matters Considered by the National Radiation Advisory Committee during 1958-59.

(a) Arrangements in Australia for the Control of the Uses of Ionizing Radiation.

13. Constitutionally, State Governments are at present responsible for controlling the use of ionizing radiation in their own territories, and for providing the necessary safeguards to the community. On the advice of the Commonwealth Government, the States have considered the passage of legislation based on a model *Radioactive Substances Act* and Regulations prepared by the Industrial Hygiene Committee of the National Health and Medical Research Council. Most States have taken some action,* but at the present time not all are equipped with legislative and administrative powers to exercise effective control over the uses of ionizing radiation.

14. Since its formation in 1957 the National Radiation Advisory Committee has devoted much attention to the need for uniform legislation in this field throughout Australia. The progress of State legislation has been kept under review.

15. Recent developments overseas in the industrial application of ionizing radiation, and other developments which may be expected from continued research, will presumably need to be applied extensively and speedily if Australian industry is to keep pace with that elsewhere. It is the Committee's opinion, however, that the widespread and safe employment of these methods in Australia could be seriously hindered by a multiplicity of controlling authorities. Moreover, the potential radiation hazards inherent in an extensive use of ionizing radiation, and of nuclear energy, are not limited by State boundaries.

16. Therefore, the National Radiation Advisory Committee has strongly recommended that the Commonwealth Government should take steps to accept full responsibility at the earliest possible date for the legislative control of all uses of ionizing radiation throughout Australia. In the absence of Federal control it is recommended that all State Governments be urged to continue equipping themselves with the necessary legislation and regulations.

17. It is noteworthy, in this regard, that those States which have so far adopted regulations have followed the most recent recommendations of the International Commis-

* Western Australia: Act and Regulations. South Australia: Amendment to the *Health Act*; Regulations in preparation. Tasmania: Act; Regulations in preparation. Victoria: Regulations under the *Health Act*. New South Wales: Act and Regulations. Queensland: Act; Regulations in preparation.

sion of Radiological Protection[8] in setting down the maximum permissible doses of radiation for the individual; it is to be expected that the remaining States will follow this lead.

(b) Atomic Weapon Tests in Australia.

18. There have been no nuclear weapon tests in Australia since October, 1957. The complete fallout data obtained by the Atomic Weapons Tests Safety Committee during all past weapon tests at the Monte Bello Islands and at Maralinga have been made available to the National Radiation Advisory Committee and have since been published or are in press.[4,5,6] Their analysis indicates that all trials have been completed safely and that the local fallout has contributed a negligible addition to the natural background radiation to which the Australian population is continuously exposed.

(c) Global Fallout in Australia.

19. A network for monitoring global fallout over Australia was installed by the Atomic Weapons Tests Safety Committee in May, 1956; continuous operation has been maintained since that date, and the results have been reported annually.[7,8,9] During the period under review high yield weapon tests were carried out overseas by the United Kingdom, United States of America and Union of Soviet Socialist Republics. The tests conducted by Soviet Russia in October and November, 1958, resulted in high yields of radioactive fission products. In the closing months of the year these caused a considerable increase in the fallout levels in Europe, and subsequently elsewhere in the northern hemisphere, but no such increase in Australia was observed.

20. From the measurements within Australia it is concluded that the whole body doses received as a result of global fallout are amongst the lowest in the world. These data, together with the results of world-wide surveys carried out by the United Kingdom and United States, show that fallout levels here are one fourth to one third the average levels for the northern hemisphere; as shown later, they have negligible biological significance.

21. In October, 1958, the United States and United Kingdom proposed a cessation of nuclear weapon testing for one year as from November 1, 1958; apart from two explosions, November 1 and 3, Soviet Russia has also refrained from further tests. The outcome of the current conference in Geneva, which is concerned with negotiating an agreement for a properly policed test ban, is still uncertain. Should this conference be successful, further additions to the radioactive reservoir in the stratosphere may be reduced or eliminated.

(i) *An Analysis of Fallout in the Australian Environment.*

22. The important radioisotopes in global fallout are the long-lived cæsium 137, strontium 90, and possibly carbon 14. High yield weapon tests held overseas are responsible for almost all the contamination of the Australian environment with these radioisotopes; the testing programmes at the Monte Bello Islands and Maralinga, which were of low yield weapons, could not give rise to a significant contribution.

23. The similarity between the nature of the radioactive precursors, half-lives and fission yields of cæsium 137 and strontium 90 suggests that their distribution in fallout will follow the same pattern. The measurement of one is sufficient for specification of both, at least for the determination of their accumulation at the surface of the earth. On the other hand the physical and chemical properties and biological behaviour of the two radioisotopes are markedly different, so that they follow separate courses through the food-chains and into the body.

24. Cæsium 137 has a radioactive half-life of 30 years and a half-life in the body of 140 days. Like potassium 40, a natural radioactive body component, cæsium 137, if introduced into the body, is distributed more or less uniformly. Because it emits gamma rays which penetrate the tissues deeply it contributes to whole body exposure either when on the ground or when carried internally.

25. No direct information on the levels of cæsium 137 in Australian materials is available to the Committee, but information may be obtained by inference, see paragraph 23.

26. Strontium 90 has a radioactive half-life of 28 years and a half-life in the body of about 10 years. It emits beta rays which penerate the body tissues for only short distances. If ingested and absorbed, strontium 90 is incorporated selectively into bone along with calcium to which it is chemically similar. For these reasons it makes an appreciable contribution to body exposure only after incorporation in the skeleton, when it is responsible for most of the dose to the bone and marrow tissues arising from fallout. Radium, a natural radioactive body component, is also concentrated in bones and provides most of the background radiation dose to bone from internal sources. Neither radium in the body nor strontium 90 contributes significantly to the genetic dose.

27. The measurement of the strontium 90 content of biological and other materials is time-consuming and technically difficult and can be carried out reliably only in specially equipped laboratories staffed by highly trained personnel. To obtain satisfactory results many samples of a particular material must be examined.

28. Because of the possible biological importance of strontium 90, the Atomic Weapons Tests Safety Committee considered early in 1957 that it was essential to monitor the levels of the radio-isotope in selected Australian materials; the Safety Committee extended its fallout measuring programme accordingly. It was anticipated at the outset that about two years would elapse before significant results would have accumulated.

29. Samples of soil, powdered milk, cabbages, and bone tissue from man and sheep are being obtained continually from all over Australia with special emphasis on the large population centres; these samples are being analysed for strontium 90.

30. During the period May, 1957, to September, 1958, 243 samples were processed. The complete data are being published by the Safety Committee[10] and have already been made available for study by the National Radiation Advisory Committee. The results obtained during this period are now briefly summarized and compared with measurements made elsewhere in the world, and with the maximum permissible levels recommended by the International Commission on Radiological Protection.[11]

31. The average accumulation of strontium 90 in Australian soils in August, 1958, was approximately one third of that found in the United Kingdom, one fourth of that found in most areas of the United States, and only one seventh of that in the mid-western United States. Australian milk, cabbages and sheep bones averaged about one half of the strontium 90 concentrations present in those materials in the northern hemisphere. The most numerous samples, 142 in number, were of human bone tissue obtained through the collaboration of pathologists in five capital cities. For purpose of assessment these samples were divided into three age groups, 0 to 5 years, 5 to 20 years and over 20 years. The results are set out in Table I.

32. As is generally known, the higher concentrations found in young bones are due to their having been formed during the period in which fallout has occurred, whereas most adult bone tissue was laid down before this period.

33. The comparison of the levels of strontium 90 in the bone tissue of human population groups is complicated by a number of factors. Nevertheless, having taken these into consideration, the Committee concludes that the average strontium 90 concentrations in Australian bone tissue in the various age groups, are less than half those in North American and European bones.

34. These data may be placed in perspective by comparing them with the recently published recommendations of Committee II of the International Commission on Radiological Protection,[11] which has laid down the maximum permissible total body burdens of various radioisotopes. For the *whole population* the commission has set a level for strontium 90 corresponding to a concentration in the human skeleton of 66$\mu\mu$c. strontium 90 per gramme of calcium. This is 110 times the concentration measured in Australian infants and 660 times that in adults.

35. As a result of the future fallout of radioactive débris already in the stratosphere, the concentration of strontium 90 in human bone is expected to rise to a maximum during the next 10 years, before decreasing with the biological half-life of the material. It can be shown that, even when this maximum is reached, the concentrations will remain considerably below those laid down for whole populations by the International Commission on Radiological Protection. In a later section of this report, in which assessments are made of possible biological consequences of fallout (paragraph 39 *et seq.*), account is taken of the forward prediction of fallout from the existing stratospheric reservoir.

36. World-wide measurements of the deposition and accumulation of strontium 90 have been made by the

United Kingdom and the United States. Their data confirm the Safety Committee's finding that the average levels in Australia are one fourth to one third those in the northern hemisphere. This difference is likely to be accentuated during the next year with the deposition in the northern hemisphere of much of the fallout from the high yield weapon tests carried out by Soviet Russia in the Arctic in October and November, 1958. The movement out of the stratosphere of débris from these tests is appreciably faster than occurs for tests near the equator; as a consequence, there is only limited stratospheric mixing and the fallout is confined almost entirely to the northern hemisphere.

37. An agreement of the type advocated by the United Kingdom and United States at Geneva, which would eliminate nuclear weapon tests between ground level and 30 miles above the earth, could prevent, or greatly reduce, further additions to the strontium 90 reservoir in the stratosphere. The total world content would then decay with a radioactive half-life of 28 years.

TABLE I.

Strontium 90 in Human Bone Tissue, Australia, 1958.

Age Group.	Number of Samples.	Average Strontium 90 Concentration (μμc. per Gramme of Calcium.)
Less than 5 years	52	0·6 ±0·1
5 to 20 years	25	0·35±0·05
More than 20 years	65	0·1 ±0·02

38. The scope of the strontium 90 survey being carried out in Australia is considered adequate and comparable to those conducted in the United Kingdom and United States. The National Radiation Advisory Committee strongly endorses the Safety Committee's decision to continue the survey for as long as is necessary, and to publish the results annually.

(ii) *Possible Biological Consequences of Fallout in Australia.*

39. The assessment of possible biological consequences of fallout involves, among other things, (*a*) the prediction of future levels of radioactive fallout from the stratosphere; (*b*) the estimation of concentrations of specific radioisotopes in particular organs and tissues; (*c*) an assumption of the radiation dose to those organs and tissues for a given concentration of a radioisotope; and (*d*) the acceptance of a relationship between the dose to the organ or tissues and any biological effect induced.

40. In making an assessment of possible biological consequences for the Australian population, the Committee has applied the assumptions, estimates and methods of calculation unanimously accepted by the United Nations Scientific Committee on the Effects of Atomic Radiation.[13] That Committee's prediction of future fallout levels is based on the measured accumulation and rate of deposition of strontium 90 at the surface of the earth; the levels of cæsium 137 are taken to be the same. Any possible increase in the incidence of leukæmia and of bone tumour which could be attributed to fallout is considered to be due to strontium 90, while any genetic defects are attributed mainly to cæsium 137.

41. A comparison has been made of the data now available on the accumulation and deposition of strontium 90 in Australia and in the rest of the world. From this information the Committee has concluded that the average doses to bone marrow and the gonads, calculated by the United Nations Scientific Committee for a world population, should be reduced by one fourth to one third for the Australian population. The Committee has adopted a factor of one third in the assessment given below, and the United Nations Scientific Committee's estimates have been modified accordingly. The assessments are based on all weapon tests conducted to date throughout the world.

42. ***Possible Increased Incidence of Leukæmia.*** On the assumption that even the smallest radiation dose to bone marrow can be leukæmogenic, and this is still unproven, the effect of fallout in Australia from all weapon tests held to date would be to produce a *maximum* of one case every two and a half years for the whole population. This should be compared with the normal incidence of the disease, which, in the same period, would amount to about 1250 cases. If weapon tests cease, this *maximum* rate will gradually fall to zero, a *total* of less than 30 cases ultimately occurring for all time.

43. The alternative view, that a certain radiation dose or threshold must be exceeded before any case of leukæmia will be induced, is gaining considerable experimental support (see paragraph 50). The United Nations Scientific Committee considered it as an alternative hypothesis, accepting, as a threshold, a dose to the bone marrow 4000 times that received annually from the natural background. On this basis *no* cases of leukæmia could be caused by fallout in Australia from all weapon tests to date.

44. *Possible Increased Incidence of Bone Tumour.* The United Nations Scientific Committee states that "the quantitative evaluation of an increase in incidence of primary bone tumour attributable to radiation presents difficulties". Accepting the assumptions of that committee and applying the reduction factor for Australia, the modified calculations give, for a normal *annual* occurrence of 5 to 10 cases of primary bone tumour *per million of the population*, a possible further one case every 5 to 10 years for the *whole population*. This increase due to fallout would be a *maximum*, not a *continuing* rate; it assumes the absence of a threshold dose for the induction of the disease. It is of interest to note that, using the same assumptions, the natural radium in bone is estimated to be responsible for more than 15 times as many cases of bone tumour as strontium 90 from fallout. If there were a threshold of the order of that referred to in paragraph 43, there would be *no* cases of bone tumour due to fallout.

45. *Possible Major Genetic Consequences.* For the purpose of estimating the genetic consequences of fallout the United Nations Scientific Committee has made a number of assumptions, the most important of which are: (*a*) even the smallest dose of radiation to the gonads can cause mutations, most of which are deleterious; (*b*) the present incidence of births affected with disorders of a genetic origin, accumulated by mutation over many generations, is taken to be 1% to 4% of all births; and (*c*) in order to complete the calculation it is necessary to determine the genetically significant radiation dose to the population which would be double the mutation rate; such an estimate is very difficult to make and a tenfold range of dose is accepted.

46. On these main assumptions, the United Nations Scientific Committee's calculations, modified for Australian fallout levels, give a *total* increase in major genetic defects, which would occur over all future generations, of between 0·2 and 7 per million of the population. This *all time* increase attributed to fallout might be compared with the *natural* occurrence of like genetic defects *per year*, for present and future generations, of 140 to 600 per million of the population.

47. The total ionizing radiation which will be received by the population of Australia as a result of all testing of nuclear weapons to date will constitute only a very small addition to the average natural background radiation. It is emphasized that, because this additional radiation is of such a low level, the biological consequences which may arise are not amenable to precise calculations, and would be too few to be detected by demographic survey. The Committee believes, however, that on the basis of the most acceptable assumptions and extrapolations allowed by present scientific knowledge, a realistic assessment of the biological consequences can be made. Such an assessment is presented in the foregoing paragraph, where an attempt is made to assign numerical values to the hazards to the health and genetic integrity of the Australian population; these values are summarized in Table II. It is concluded from this assessment that, even on the most pessimistic assumptions, the risks to the Australian population are insignificant when compared to the normal hazards of everyday life.

(iii) *Recent Developments which May Affect the Above Assessments.*

48. Since the United Nations Scientific Committee prepared its report a variety of experimental results have been published which could modify the estimated biological consequences of fallout given above.

49. *Reduction of the Stratospheric Residence Time of Radioactive Débris.* For its calculation of future fallout levels the United Nations Scientific Committee accepts a mean residence time of radioactive débris in the stratosphere of ten rather than five years "since it tends to yield results on the pessimistic side". If, as had been suggested recently,[13,14] a mean residence time of less than five years is more correct, the biological consequences estimated above will be reduced considerably.

50. *Possible Threshold for Somatic Effects of Radiation.* As regards the induction of leukæmia or bone tumour, both Brues[15] and Finkel[16] conclude, in recently published analyses, that the evidence favours the existence of a threshold dose; this approach is supported by other work, as yet unpublished, but known to the Committee. If there is a threshold dose, even one as low as 25 times the annual background dose (1/160 of that considered by the United Nations Scientific Committee, paragraph 43), no cases of leukæmia or bone tumour would be induced by fallout in Australia, from all weapon tests to date, unless average doses to individuals exceeded the mean value for the population by a factor of 10. This degree of variation is unlikely to occur.

TABLE II.

Possible Biological Consequences of Some Sources of Radiation: Summary for the Population of Australia.[1]

	Leukæmia.	Bone Tumour.	Major Genetic Defects.
Normal annual incidence ..	500	Less than 100	1400 to 6000
Annual incidence attributed to natural background radiation ..	0[2] to 50[3]	0[2] to 10[3]	50[4] to 2000[4]
Accumulated fallout from all nuclear weapons tested to date:			
Maximum annual incidence	0[2] to 0·4[3]	0[2] to 0·2[3]	—
Total for all time	0[2] to 30[3]	0[2] to 14[3]	2[4] to 70[4]

[1] Australian population taken to be 10 millions.
[2] On the assumption of a threshold in the dose-effect relationship.
[3] On the assumption of a linear dose-effect relationship.
[4] On assumptions outlined in paragraph 45 above.

51. *Influence of Dose Rate on the Genetic Effects of Radiation.* Russell *et alii*[17,18] have presented results of experimental work on the genetic effects of radiation which are of particular interest. In summarizing their findings, these authors state that "from a practical point of view the results indicate that the genetic hazards, at least under some conditions, may not be as great as those estimated from the mutation rates obtained with acute irradiation". The "some radiation conditions" referred to are those in which the total radiation dose to the gonads is received at a very slow rate in contrast to an acute or fast rate. Their findings would apply to irradiation of the gonads from fallout and, if confirmed by further studies, will mean that the slight genetic consequences given in the above evaluation would be reduced.

52. It should be emphasized that the developments discussed in paragraphs 49 to 51 are in the direction of reducing estimates of the hazards. The values given in paragraphs 42, 44 and 46, based on a linear dose-effect relationship, should therefore be regarded as upper limits of the effects; they give the most pessimistic interpretation of the possibilities.

53. *Biological Significance of Carbon 14.* In its report of August, 1958,[18] the United Nations Scientific Committee did not consider the contribution that carbon 14 might make to the possible hazards to population from the radioactivity produced in nuclear weapon testing. Even now insufficient information is available to allow a detailed evaluation of the problem, but an upper limit can be set on the possible hazards.

54. Carbon 14 forms the same chemical compounds as the element carbon; it can, therefore, be incorporated into the structure of organic molecules and so become part of living tissues. It decays with a half life of about 5600 years, emitting low energy beta particles. When embodied in tissue, carbon 14 can affect living cells.

55. Carbon 14 occurs in nature; it is produced by the absorption of cosmic ray neutrons in the nitrogen of the atmosphere. Its production and decay have been in equilibrium for some time and the radioisotope exists in man and his environment in essentially constant quantity. Carbon 14 in the body is responsible for about 1·5% of the natural radiation to which man is continuously exposed.

56. Nuclear weapon explosions can lead to the production of carbon 14 through the absorption in nitrogen of the neutrons that are generated. These neutrons may result from fission or fusion reactions or, as in many high yield weapons, from a combination of both. From a knowledge of the properties of nuclear explosions and the total yield of all weapons tested to date, it is possible to estimate the radiation dose to the whole body from weapon-produced carbon 14.[19] At present this amounts to about $\frac{1}{3}$% of the natural background radiation from all sources. It will, therefore, be responsible for less than one-fifth of any biological effects caused in the future by *naturally occurring carbon 14*. It has still to be determined, however, what part, if any, carbon 14 plays in the production of biological effects, and especially of mutations or other genetic effects.

(d) Australian Laboratories for the Measurement of Low Levels of Radioactivity.

57. Proposals have recently been made by a number of scientific groups in Australia to initiate measurements of low levels of radioactivity. Such radiochemical measurements are technically difficult, requiring special equipment and highly trained personnel. Should the network be undertaken as proposed, the Committee believes that unnecessary use of finance and manpower could result, and furthermore, that ill-equipped laboratories could produce misleading information.

58. The Committee notes that the Australian Atomic Energy Commission has set up a laboratory for strontium 90 analysis and for other measurements of low levels of radioactivity. It is considered essential to establish two independent authoritative laboratories in Australia so that analyses can be cross-checked, because it would otherwise be difficult to attain the high standard of reliability so necessary in this field.

59. The Committee has recommended, therefore, that the Department of Health should give consideration to establishing facilities for similar radiochemical work within its Commonwealth X-ray and Radium Laboratory, and that finance should be made available for this purpose.

60. Both laboratories should be equipped to perform a variety of radiochemical analyses, including carbon 14, strontium 90, iodine 131 and cæsium 137.

4. SUMMARY.

The Medical Use of Ionizing Radiation (Paragraphs 5 to 11).

61. The hazards of ionizing radiation have been widely publicized, sometimes in a way that caused unnecessary alarm. As a result there is a danger that individuals may come to harm through reluctance or refusal to undergo necessary X-ray examinations. It is obvious that the use of X radiation is essential to medical practice (Paragraph 5). The Committee strongly supports efforts being made by many responsible authorities to reduce this source of radiation exposure to a minimum consistent with medical needs (Paragraphs 6 to 9). Mass miniature radiographic surveys for the control of tuberculosis should be continued with modern techniques and equipment (Paragraphs 10 and 11).

Federal Control of the Use of Ionizing Radiation in Australia (Paragraphs 13 to 17).

62. The increasing application of ionizing radiation in medicine and industry in Australia could be seriously hindered by a multiplicity of controlling authorities. The Committee recommends that the Commonwealth Government should seek the necessary powers to bring all uses of ionizing radiation in Australia under Federal legislative control as soon as possible.

Australian Laboratories for the Measurement of Low Levels of Radioactivity (Paragraphs 57 to 60).

63. A laboratory facility for the measurement of low levels of radioactivity should be established in Australia, additional to that in existence in the Australian Atomic Energy Commission. Accordingly, the Commonwealth Department of Health should consider establishing a suitable facility within its X-ray and Radium Laboratory.

Atomic Weapon Tests in Australia (Paragraph 18).

64. The Committee has received all relevant data on fallout over Australia from these tests. Each test has been completed safely, with a negligible addition to the background radiation.

Global Fallout in Australia and its Biological Implications (Paragraphs 19 to 56).

65. *Australian Measurements.* The Committee considers that the present programme for monitoring global fallout in Australia is adequate; it is comparable in scope with

those carried out in the United Kingdom and United States. Comparison of Australian and overseas data indicates that fallout levels here are about one fourth to one third of those in the more densely populated regions of the northern hemisphere (Paragraphs 19 to 38).

66. *Possible Biological Consequences.* At present, any biological damage caused by low levels of ionizing radiation cannot be computed with precision. In its report of August, 1959, the United Nations Scientific Committee on the Effects of Atomic Radiation adopted generally pessimistic assumptions in simplifying the assessment of biological damage from fallout. On these assumptions, estimates have been made in the present report of upper limits for possible biological consequences to the Australian population of present and future fallout from all nuclear weapon tests to date (Paragraphs 39 to 47).

Leukæmia: A *maximum* of one additional case of leukæmia every two and a half years for the whole Australian population might occur as a result of fallout; this should be compared with the normal incidence of about 1250 cases in the same period. Less than 30 additional cases might occur for *all time* (Paragraphs 42 and 43).

Bone Tumour: A *maximum* of one additional case of bone tumour every 5 to 10 years for the whole Australian population might occur as a result of fallout; this should be compared with the normal incidence of about 500 cases in the same period (Paragraph 44).

Major Genetic Consequences: The total increase which might occur over all future generations as a result of fallout would be between 0·2 and 7 per million of the population; this should be compared with the normal annual incidence of 140 to 600 per million of the population (Paragraphs 45 and 46).

67. *The Biological Implications of Fallout in the Light of Recent Developments.* Recent scientific research has shown that the simplifying assumptions used in estimating somatic and genetic hazards from fallout give values which almost certainly overestimate the danger. It is emphasized that even the most pessimistic estimate corresponds to a risk which is insignificant in comparison with the normal hazards of life. Fallout from all weapon tests to date will contribute only a very small addition to the average natural background radiation to which human beings have always been exposed.

F. M. BURNET,
SYDNEY SUNDERLAND,
J. P. BAXTER,
DUDLEY A. GILL,
W. P. HOLMAN,
L. H. MARTIN,
D. J. STEVENS,
E. W. TITTERTON,
J. R. MORONEY (Secretary).

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Out of the Past.

In this column will be published from time to time extracts, taken from medical journals, newspapers, official and historical records, diaries and so on, dealing with events connected with the early medical history of Australia.

THE SYDNEY HOSPITAL.[1]

[From the *Australasian Medical Gazette*, May 20, 1897.]

DR. G. F. RUTTER who has been acting for some years as Registrar and Pathologist at the Hospital has been reappointed to the position at a salary of £100 per annum and as senior to the Senior Medical Officer. Dr. W. C. McClelland has been appointed Senior Resident Medical Officer at a salary of £75 per annum. Dr. Thomas Fiaschi, honorary surgeon, having proceeded to Africa to assist his compatriots in the Italian-Abyssinian war, Dr. R. Steer Bowker was appointed in his room. During his connection with the Hospital, Dr. Fiaschi rendered most valuable services, and devoted much of his time and undoubted surgical skill to the interests of the hospital patients in a truly self denying spirit.

Correspondence.

AMENDMENTS TO PHARMACEUTICAL BENEFITS ACT, 1959.

SIR: Now that the above amending Act has passed the House of Representatives in the Federal Parliament and appears likely to also pass the Senate, it would appear opportune to look at it from the medical angle.

Whilst approving of the minister's view that some control should be exercised over the mounting costs of the drug bill to the Federal Government, estimated to be £30,000,000 for the next financial year, and also approving of the fee of 5s. per prescription, it would be wise to consider two aspects:

1. The effect on lodge friendly societies. It would appear that the cheap medicine supplied by these bodies will now disappear, and probably may have the effect, at any rate on these goldfields, of wiping out the friendly societies altogether.

2. The effect on Goldfields Pharmaceutical Fund. It would appear that this Fund will also disappear, as the cost of dispensing at the rate of 5s. per person would not be able to be met by this Fund.

Now, speaking generally, what will be the effect on the public generally?

It would appear that patients attending medical practitioners for trivial matters will tend to refrain from

[1] From the original in the Mitchell Library, Sydney.

actually buying the drugs prescribed, if in the lower income groups. This would seem to have the effect of buying patent medicines at cheaper rates, and not attending surgeries, unless symptoms became more pressing. This might not be an unmixed evil as far as the practitioner is concerned; but it may actually drive people to unauthorized people to save money.

Will there be any wild rush to join up with medical funds to cover against serious illness? This might be a very good thing for the general public.

On a cursory glance at the scheme, the benefits would seem to outweigh the disadvantages, and perhaps we will have a fee-for-service scheme more widely spread over this continent, which would perhaps cut down unnecessary visits to doctors for trivialities, but allow much more consultation where necessary ailments need more detailed examination and investigation.

The effect on specialists would appear to be that their services would be more in demand.

Finally, regarding the dispensing chemists, whilst their bookwork would undoubtedly be increased, their remuneration would appear to be more assured; but as a check their work will come under closer Government scrutiny.

There may be some unforeseen results follow this measure. If so, amendments can always be introduced, and where progress is concerned, the medical profession must keep up with the times, and always give service, whatever the cost may be.

Yours, etc.,

17 Boulder Street, H. T. ILLINGWORTH.
Kalgoorlie,
Western Australia.
November 20, 1959.

Post Scriptum.

1. The fact that each prescription will cost the definite sum of 5s. will be of considerable benefit to patients, rather than an undefined amount.

2. The fact that each prescription will cost this sum will have the effect of causing conscientious practitioners to endeavour to restrict their prescribing as far as possible to one drug or compound of drugs wherever possible, to reduce expense to the patient.

MEDICAL MATTERS AND THE PRESS.

SIR: I wish to pen my objection to the unseemly use by a Sydney newspaper of the names of two psychiatrists in a recently published article expressing their views on alcoholism. However, it has been said that it is an ill wind that blows nobody any good; for had their names not appeared in connexion with the views expressed, the public might have associated these unproven and, to my way of thinking, ridiculous statements with psychiatrists in general, which would have been unfortunate.

Yours, etc.,

Chatswood, S. G. ROWE.
New South Wales.
November 11, 1959.

THE CASE AGAINST TONSILLECTOMY.

SIR: As a country practitioner with 40 years' experience, I have had ample opportunity of studying the health of children. There are two main indications for the operation of tonsillectomy. Firstly, there is the child who suffers from recurrent tonsillitis, generally with enlargement of the submaxillary glands. It is cruel to let these children suffer from frequent attacks of a painful disease, and also run the risk of a generalized infection such as rheumatic fever. They miss a good deal of schooling, and are often in a poor physical condition. The second type of child who needs tonsillectomy is the one with large hypertrophied tonsils and adenoids. He is subject to frequent attacks of coryza, is a restless sleeper, and he and his mother have many disturbed nights. I have seen many of these children grow to adult life, and in practically all instances they have been stronger and healthier after the operation.

The numerous infants who are brought to a doctor by their mother with a home diagnosis of teething practically all have otitis media caused by infection spreading from adenoids. If the adenoids are removed, the middle-ear infection is certainly minimized and generally settles down. Very often the tonsils are enlarged; but when the child uses its nose and not its mouth for breathing, the tonsils diminish in size.

I am surprised to read Dr. Rogers's statement that tonsils and adenoids often grow again. The tonsil is an encapsulated structure, and when dissected out it cannot grow again. Of course, in the days when the guillotine was used, part of the tonsil was often left behind, even by the most skilful. Hæmorrhage rarely occurs if bleeding vessels are sutured, but if it does, the Graham Brown clamp is easy to apply and will always stop it.

As for adenoids, I have often explored the naso-pharynx of children who have had adenoidectomy performed in infancy, and have never found any adenoid tissue yet.

Many practitioners who watch children over a number of years know that the operations of adenoidectomy and tonsillectomy bring health and happiness to their young patients.

Yours, etc.,

Armidale, E. KENT HUGHES.
New South Wales.
November 13, 1959.

SIR: Dr. S. K. Rogers's letter must have given little satisfaction even to those who think as he does. I read it with mounting amusement till the end of paragraph 2, when I encountered the ugly word "butchery".

If Dr. Rogers is quoting his source in using the word, I think he would do himself more justice by the use of quotation marks. If, however, the word is his own, I suggest that he has done a grave disservice to his profession by a vulgar rejection of the bona fides of those of his colleagues who differ from him, and this on the slenderest, most questionable of evidence.

If this is the case, I consider, sir, that Dr. Rogers owes this column a simple apology for a needless vulgarity.

Yours, etc.,

B.M.A. House, ALLAN M. BRYSON.
135 Macquarie Street,
Sydney.
November 10, 1959.

QUANTITY OR QUALITY UNDER THE NATIONAL HEALTH SERVICE.

SIR: In your issue of November 7, the Commonwealth Minister for Health is reported as having referred to the freedom to prescribe what he wishes which will be preserved for the doctor under the amended National Health Service. The theme was elaborated to the extent of suggesting that prescribing will be a simpler and more agreeable process than formerly.

A little reflection reminds us that there is another side to the coin. If anyone is to gain advantage from the new measures, it certainly is not likely to be the doctor. If we accept the proposition that the doctor will be free to prescribe what he wishes, we must recognize that, as the quality is liberalized, so the quantity is restricted; and the quantity will be restricted by statutory regulation down to the last tablet, ounce, grain, etc.

It seems inevitable that the number of "repeats" that the doctor in his freedom may order will also be stipulated, and will be dependent on his ordering a certain full quota in the first place. This has been an undesirable feature of Government-controlled prescribing in the past; but such an example as the following illustrates how much more undesirable it will be in the future. One wishes to order a barbiturate for a neurotic, but thinks it unwise to order a large quantity at a time. A small amount with a number of repeats (at minimum specified intervals if he wishes) would be safer. Under the N.H.S. method he will have to order the full amount or else bring the patient back for fresh prescriptions with unnecessary frequency.

Judging by past performance under the N.H.S. and the Pensioner Medical Service, the regulations detailing the quantities allowed will be difficult for the ordinary practitioner to learn, much less comprehend, and before he gets far with either process amendments to the regulations will put him back to scratch.

It seems certain that all prescriptions will be required in duplicate at least, and that the appearance of a proprietary name will result in the prescription being returned long afterwards stamped "disallowed".

In other words, far from preserving the doctor's freedom in prescribing, it looks as though the Government control at present exercised over the lesser part of the field is to be extended by one swift, political *coup* to cover the whole of it. Such changes may be progressive; they may be inevitable; but the profession will do well to examine their implications and the political reassurances that herald them with the most critical scrutiny.

Yours, etc.,

Randwick, N.S.W.
November 11, 1959.

H. N. MERRINGTON.

A NEW DRUG IN RELIEF OF ANGINA PECTORIS.

SIR: I would like to thank Professor C. R. B. Blackburn for drawing attention to the possible dangers of "Marsilid" therapy (MED. J. AUST., September 3, 1959). His reference to the article of Kahn and Perez is particularly valuable, as it seems a very thoughtful and factual contribution, which makes rather disturbing reading. The purpose of this letter is a plea, from a psychiatrist's viewpoint, that this very important subject might be followed up as quickly as possible in your Journal, so that psychiatrists could assess the degree of risk that is incurred in prescribing the drug.

Psychiatrists are, I think, in rather a dilemma over "Marsilid', as it seems to be a very useful anti-depressant, which might still have a place in the treatment of desperate cases of depression provided the percentage of toxicity is not too heavy. Any contributor who could shed further light on this problem would be performing a valuable service. Perhaps the technical advisers of the company distributing the drug could help in this respect. A final question from the medico-legal angle is whether, before prescribing the drug, one should require a patient to sign a statement that he understands it may involve certain risks.

Yours, etc.,

254 St. George's Terrace,
Perth.
November 13, 1959.

F. G. PRENDERGAST.

STAPHYLOCOCCAL INFECTION IN INFANTS.

SIR: In your issue of October 31, Dr. Isbister in Sydney, and Dr. Hill and his colleagues in Melbourne, stress the importance of pustular rashes, infected abrasions and eczema in staphylococcal infections of the newborn. The Melbourne workers report a gratifying reduction in these complications following a gentle skin hygiene (no baths, sponging with tap water when required), and painting with an emulsion of hexachlorophene.

I was much exercised by the same problem during my years of general practice. It was the custom in the nursing homes to remove vigorously, and as soon as possible after birth, every trace of vernix. It appeared to me, however, that the vernix should be left undisturbed, firstly because it is the ideal protective proved for each particular infant, and secondly to avoid the trauma involved in its early and thorough removal. I therefore ordered that no effort be made to remove it, and that when it began to dry it was to be lightly wiped with olive oil. Meconium and fæces were removed by light swabbing with saline. The skin troubles forthwith disappeared.

This experience, together with the Berlin researches which throw such grave doubt upon the antiseptic value of the hexachlorophene emulsion (see MED. J. AUST., August 29, 1959, page 298), would suggest that the gentle skin hygiene, rather than the hexachlorophene, accounts for the good results of the Melbourne workers.

Yours, etc.,

235 Macquarie Street,
Sydney.
November 16, 1959.

V. J. KINSELLA.

THE CHALLENGE AHEAD.

SIR: I was delighted to see in your issue of November 14 that the correspondence columns, often the harbour of ill-founded and unscientific opinion, contained at least one example of scholarly and factual writing. I refer, of course, to Dr. G. P. O'Day's "The Challenge Ahead", which so thoroughly and convincingly gave the lie to Dr. Kinsella.

As the writer stated, "it is surely illogical for medical men to be scientific in medicine and surgery and unscientific in politics". I feel, however, that further factual and well-documented evidence could be presented to strengthen his general thesis, and I therefore make so bold as to supplement his material.

There can, of course, be no disagreement regarding the glorious victories of the North Koreans and the downtrodden Tibetan peoples over their oppressors, nor concerning that of the Hungarian Government over the bloodthirsty counter-revolutionaries. However, many other examples of underprivileged and harried peoples rising to greatness under the ægis of Marxism might have been cited here: viz., Eastern Germany struggling against the threat of the West Berlin airlift, the Chinese Republic faced with the imperialism of India and Quemoy, or the heroic single-handed efforts of Fuchs and Gouzenko for the peace-loving peoples of the British Isles and Canada.

How well also is the author's conviction that "Socialism . . . makes all as free as possible at the given time in the given state of knowledge" illustrated by the contrast between peaceful prosperous Eastern Germany and the abjectly enslaved and poverty-stricken Western Zones.

One point, however, has to be taken on faith alone. This is the scientific proof of the validity of Marxist theory as evidenced by the fulfilment of its predictions. The baser and more thoughtless type of person has been known to aver that there is as much resemblance between the theory and the practice as between chalk and cheese. What atrocious ignorance! What astounding temerity to stand in the way of "the victory that Marxism today is rapidly winning in the minds of men"!

I am sure Dr. O'Day would agree with me that in the event of any such being discovered, the precedent set in the Moscow trials, the Hungarian counter-revolution, etc., etc., etc., should be followed—they should be lined up against a wall and shot.

This, of course, according to both the theory and the practice, is how the victory is to be won.

Yours, etc.,

Derribong Street,
Peak Hill,
N.S.W.
November 17, 1959.

P. W. SUNDIN.

SIR: Dr. G. P. O'Day renews his curious claim that Marxism is scientific. But he cannot get his basic facts right.

He says that there are only two consistent philosophies—materialism, which admits only material being, and idealism, which admits only immaterial being. He forgets the main central stream, the common-sense or Aristotelic philosophy, moderate realism, which recognizes both the material and the immaterial modes of being.

In an effort to hide the communist linkage with nazism, he suggests that the Vatican was on the side of nazism and fascism. But this suggestion is false. The Vatican fought these tyrannies, and officially condemned them in the encyclicals *"Mit Brennender Sorge"*, and *"Non Abbiamo Bosogno"*.

In further vain striving to the same end, he points out that Nazis are capitalists. He fails to see that the common foundation lies deeper than the economic order. It lies in atheism, and consequent State tyranny, totalitarianism and denial of the natural law and of personal rights. Nazism and Communism are at one in their evil philosophy. Marx studied in a Prussian university where "Hegel" was compulsory reading, and he simply replaced Hegel's "idea" with his own idea of matter.

But surely Dr. O'Day cannot be serious when he rejects the "classless society", and, at the same time attributes paradise and Nirvana to idealism. He is forgetting Karl Marx! And, at the same time, confusing Mahomet with Mussolini, and Buddha with Berkeley.

But most delightful is his assurance that Marxism "makes all as free as is possible at the given time in the given state of knowledge". Marxists should therefore go back to the days when the Great Walls were built, as in England and in China. For the state of knowledge was then such that walls or "curtains" could be built to keep marauders out, not just to keep the family from going abroad.

Yours, etc.,

235 Macquarie Street,
Sydney, N.S.W.
November 18, 1959.

V. J. KINSELLA.

SIR: Dr. O'Day asks is the Marxism-Leninism-Communist theory scientific. The answer to this is simple: no.

Science equals the whole body of truths or facts, known and believed respecting mind and matter. There is a common foundation for Nazism and Communism, and that is, if you don't do what you are told you'll be bumped off, and according to Dr. O'Day, to be scientific in politics we have to agree with this.

I fought the Nazis in their war and the Communists in theirs in Korea, which was instigated by the Russians and the Chinese, and thank goodness, we beat them, or by now they would have been in Malaya and Indonesia preparing for an assault on Australia.

The news says that 30 young Hungarians have just been shot for their participation in the 1956 tragedy, and 100 more are waiting the same fate as soon as they are 18. The Tibetans are being butchered by the Chinese; the Laos trouble is being helped by the Vietnamese and, according to Dr. O'Day, this is scientific.

Yours, etc.,

N. M. KATER.

"Egelabra",
Warren, N.S.W.
November 19, 1959.

SIR:

The things you say
Dear Doctor O'Day,
Make me wonder
Whether for politics
It had not been better
For you to have written
A medical letter.

—ANONYMOUS (XXth Century).

EVALUATION OF THE HEALTH OF INFANTS FED FULL-STRENGTH COW'S MILK.

SIR: Dr. Morris, in his letter commenting on the above article (MED. J. AUST., November 7, 1959, page 701), raises the interesting point that "most mothers would be prepared to master a slightly more complicated feeding formula if discomfort to their babies could be avoided". We would point out that this comment is based on the assumption that babies fed on formulæ do not have any type of discomfort, and this assumption is certainly unjustified. It is only necessary to look at the wide variety of suggested formulæ by various authorities to realize that, as in most branches of medicine, where there are a variety of treatments, there is none that is perfect. Surely this would not be so if all discomfort had been advoided.

Dr. May's quotation that "the onus of proof has shifted onto the advocates . . . " is certainly as true in this instance as in any branch of medicine, and we accept this onus. A possible cause of the incidence of constipation was deduced as a result of this survey and shall be investigated further. We would expect this to result in a decrease in its incidence. However, it is interesting that in the one and a half centuries during which the advocates of formulæ have had ample opportunity to put forward and prove the superiority of formulæ, they have not done so. The multiplicity of the formulæ bears witness to this fact.

Yours, etc.,

R. A. MACMAHON,
JOAN M. WOODHILL,
R. M. GIBSON.

Royal Newcastle Hospital,
Newcastle, N.S.W.
November 30, 1959.

Post-Graduate Work.

THE POST-GRADUATE COMMITTEE IN MEDICINE IN THE UNIVERSITY OF SYDNEY.

COURSES, JANUARY TO MARCH, 1960.

THE Post-Graduate Committee in Medicine in the University of Sydney announces the following programme of post-graduate courses to be held from January to March, 1960.

Course on the Management of Cardiac Arrest.

A one-day course in the management of cardiac arrest will be held on February 12, at the Royal Prince Alfred Hospital and the Department of Surgery in the University of Sydney. The main feature of the course will be a practical demonstration in the operating theatre of the New Medical School, where it will be possible to stop an animal's heart with fluothane, after which candidates will be allowed to practise cardiac massage and accordingly become reasonably familiar with this emergency procedure. The course will be limited to 10 candidates, the closing date for applications being February 1. The fee for attendance is two guineas, or one guinea for members of the annual subscription course.

Week-End Course in the Art of Teaching.

A week-end course in the art of teaching will be held on February 20 and 21 at the Royal Prince Alfred Hospital and conducted by members of the staff of the Sydney Teachers' College. Attendance will be limited, and restricted to full or part-time teachers in the Faculty of Medicine of the University of Sydney. It is likely that a second course will be held later in the year. The fee for attendance is one guinea, and early application is essential.

Course for Primary F.R.A.C.S. and F.F.A.R.A.C.S. Examinations.

A part-time refresher course suitable for candidates proceeding to the primary F.R.A.C.S. and F.F.A.R.A.C.S. examinations to be held in Sydney on September 1, 1960, has been organized in the Departments of Anatomy, Physiology and Pathology in the University of Sydney, in conjunction with the New South Wales State Committee of the Royal Australasian College of Surgeons. The course will begin on May 9 and continue for a period of 12 weeks, and will take the form of tutorials held in the late afternoons, the last month being devoted to revision and viva-voce examinations. The closing date for applications is March 11, and candidates will assemble shortly after this date to be addressed by selected lecturers and given guidance concerning standard textbooks and reading material in general. Special arrangements will be made for overseas and interstate candidates, who need not attend this preliminary assembly. Applications should be sent to the Post-Graduate Committee. The fee for attendance is 30 guineas.

Course for Final F.R.A.C.S. Examination.

A full-time course in advanced surgery, suitable for candidates proceeding to the final F.R.A.C.S. examination, will begin in Sydney on March 14 and continue for a period of six weeks, concluding prior to the final fellowship examination on May 6. The course is sponsored by the New South Wales State Committee of the Royal Australasian College of Surgeons and the Department of Surgery in the University of Sydney, in conjunction with the Post-Graduate Committee. Headquarters for candidates will be the Sir Harold Dew Study Room at the New Medical School. Lectures, demonstrations and clinical teaching will be conducted at the Royal Prince Alfred Hospital, Sydney Hospital, St. Vincent's Hospital and the Royal North Shore Hospital of Sydney. Applications will close on February 12, and as numbers on the course will be strictly limited, early application to the Committee is essential. The fee for attendance is 25 guineas.

Week-End Course in Neurology.

A week-end course in neurology suitable for general practitioners will be held on March 12 and 13 at the Royal North Shore Hospital of Sydney. The fee for attendance is three guineas.

Week-End Course in Electrocardiography.

A week-end course in electrocardiography suitable for general practitioners will be held on March 19 and 20 at Sydney Hospital. The fee for attendance is three guineas.

Course for Part I D.D.R. and D.T.R.

Courses for Part I examinations of the Diploma in Diagnostic Radiology and of the Diploma in Therapeutic Radiology of the University of Sydney will begin on March 14 and continue for a period of four months. Lectures and demonstrations are held in the afternoons only. The fees for attendance are 50 guineas for each course. Information concerning requirements for these diplomas may be obtained from the office of the Committee.

Method of Enrolment.

Early written application should be made to the Course Secretary, Post-Graduate Committee in Medicine, 131 Macquarie Street, Sydney. Telephones: BU 4497-8. Telegraphic address: "Postgrad Sydney."

Naval, Military and Air Force.

APPOINTMENTS.

THE following appointments, changes etc. are published in the *Commonwealth of Australia Gazette*, No. 65, of October 22, 1959.

NAVAL FORCES OF THE COMMONWEALTH.

Citizen Naval Forces of the Commonwealth.

Royal Australian Naval Reserve.

Appointments.—Kenneth Aubrey Boulton and Alan James Goble are appointed Surgeon Lieutenants, dated 24th April, 1959, and 5th June, 1959, respectively.

District Naval Medical Officer.—Surgeon Lieutenant Kenneth Aubrey Boulton is appointed District Naval Medical Officer, Western Australia, dated 21st August, 1959.

AUSTRALIAN MILITARY FORCES.

Australian Regular Army.

Royal Australian Army Medical Corps (Medical).

The Short Service Commission granted to 3/40123 Major (Temporary Lieutenant-Colonel) A. P. Hanway is extended until 30th September, 1960.

The Short Service Commission granted to 3/12030 Captain (Temporary Major) S. H. R. Palmer is extended until 6th February, 1962.

Citizen Military Forces.

Northern Command.

Royal Australian Army Medical Corps (Medical).—1/39206 Lieutenant-Colonel W. D. Exton is transferred to the Reserve of Officers (Royal Australian Army Medical Corps (Medical)) (Northern Command), 1st September, 1959.

Eastern Command.

Royal Australian Army Medical Corps (Medical).—The provisional rank of 2/127060 Captain D. F. Booth is confirmed. 2/101243 Captain (provisionally) P. B. Humphris relinquishes the provisional rank of Captain, 26th July, 1959, is transferred to the Reserve of Officers (Royal Australian Army Medical Corps (Medical)) (Eastern Command), and is granted the honorary rank of Captain, 27th July, 1959. 2/111127 Captain R. H. Higham is transferred to the Reserve of Officers (Royal Australian Army Medical Corps (Medical)) (Eastern Command), 31st July, 1959.

Southern Command.

Royal Australian Army Medical Corps (Medical).—3/101837 Captain (provisionally) E. R. Moran relinquishes the provisional rank of Captain, 7th July, 1959, is transferred to the Reserve of Officers (Royal Australian Army Medical Corps (Medical)) (Southern Command) and is granted the honorary rank of Captain, 8th July, 1959. 3/101045 Captain (provisionally) J. C. Doyle relinquishes the provisional rank of Captain, 12th July, 1959, is transferred to the Reserve of Officers (Royal Australian Army Medical Corps (Medical)) (Southern Command) and is granted the honorary rank of Captain, 13th July, 1959. *To be Captains (provisionally)*—3/129455 Donald Ross Macdonald, 1st August, 1959, and 3/101951 Peter Matheson Birrell, 24th August, 1959.

Unattached List.

Royal Australian Army Medical Corps (Medical).—2/79109 Captain R. L. Manning is appointed from the Reserve of Officers, 20th August, 1959.

DISEASES NOTIFIED IN EACH STATE AND TERRITORY OF AUSTRALIA FOR THE WEEK ENDED NOVEMBER 7, 1959.[1]

Disease.	New South Wales.	Victoria.	Queensland.	South Australia.	Western Australia.	Tasmania.	Northern Territory.	Australian Capital Territory.	Australia.
Acute Rheumatism	3	5(1)	1(1)	..	1	..	..	..	10
Amœbiasis	..	..	..	..	..	..	1	..	1
Ancylostomiasis	..	..	2	..	..	..	12	..	14
Anthrax	..	..	..	..	..	..	..	..	..
Bilharziasis	..	..	..	..	..	..	..	..	..
Brucellosis	..	1	..	..	..	..	..	..	1
Cholera	..	..	..	..	..	..	..	..	..
Chorea (St. Vitus)	..	..	..	..	..	..	..	..	..
Dengue	..	..	..	..	..	..	..	..	..
Diarrhœa (Infantile)	..	14(13)	2(2)	..	..	..	1	1	18
Diphtheria	..	..	..	3(3)	..	..	..	..	3
Dysentery (Bacillary)	..	..	..	..	3(1)	..	3	..	6
Encephalitis	..	3(2)	..	1(1)	..	..	..	..	4
Filariasis	..	..	..	..	..	..	..	..	..
Homologous Serum Jaundice	..	..	..	..	..	..	..	..	..
Hydatid	..	..	..	..	..	..	..	..	..
Infective Hepatitis	60(17)	44(28)	12(4)	23(10)	4(3)	..	..	..	143
Lead Poisoning	..	..	2(1)	..	1(1)	..	..	..	3
Leprosy	..	..	1(1)	..	1	..	1	..	3
Leptospirosis	..	..	..	..	..	..	..	..	..
Malaria	..	..	..	..	..	..	..	..	..
Meningococcal Infection	1(1)	1(1)	1(1)	..	..	1	..	..	4
Ophthalmia	..	..	..	..	..	..	..	..	..
Ornithosis	..	..	..	..	..	..	..	..	..
Paratyphoid	..	..	..	..	..	..	..	..	..
Plague	..	..	..	..	..	..	..	..	..
Poliomyelitis	..	1(1)	..	..	..	..	..	..	1
Puerperal Fever	..	..	..	..	1	..	..	..	1
Rubella	..	38(21)	..	2	..	..	1	..	41
Salmonella Infection	..	..	..	..	..	..	..	..	..
Scarlet Fever	4(2)	26(18)	..	13(4)	2(2)	..	..	..	45
Smallpox	..	..	..	..	..	..	..	..	..
Tetanus	..	..	..	..	..	..	..	..	..
Trachoma	..	..	..	..	2	..	17	..	19
Trichinosis	..	..	..	..	..	..	..	..	..
Tuberculosis	48(25)	19(12)	8(1)	10(6)	6(4)	3(2)	..	..	94
Typhoid Fever	..	..	..	..	..	..	..	..	..
Typhus (Flea-, Mite- and Tick-borne)	..	..	..	..	1	..	..	..	1
Typhus (Louse-borne)	..	..	..	..	..	..	..	..	..
Yellow Fever	..	..	..	..	..	..	..	..	..

[1] Figures in parentheses are those for the metropolitan area.

The following appointments, changes etc. are published in the *Commonwealth of Australia Gazette*, No. 67, of October 29, 1959.

AUSTRALIAN MILITARY FORCES.

Citizen Military Forces.

Northern Command.

Royal Australian Army Medical Corps (Medical).—1/39184 Captain G. B. Cavaye is transferred to the Reserve of Officers (Royal Australian Army Medical Corps (Medical)) (Northern Command), 29th July, 1959.

Eastern Command.

Royal Australian Army Medical Corps (Medical).—To be Lieutenant-Colonel, 15th May, 1959.—2/79012 Major (Temporary Lieutenant-Colonel) G. Clifton-Smith, E.D.

To be Captains (provisionally)—2/79296 John Churchill Crakanthorp, 17th July, 1959, 2/127076 Bruce Ramsay Crofton Daniel, 17th September, 1959, and 2/221810 Ralph Abraham Shapiro, 18th September, 1959.

2/62453 Honorary Captain K. D. Coulthurst is appointed from the Reserve of Officers and to be Captain (provisionally), 28th August, 1959. 2/183744 Captain (provisionally) H. A. Fisher relinquishes the provisional rank of Captain, 17th August, 1959, is transferred to the Reserve of Officers (Royal Australian Army Medical Corps (Medical)) (Eastern Command) and is granted the honorary rank of Captain, 18th August, 1959. The provisional appointment of 2/79296 Captain J. C. Crakanthorp is terminated, 16th July, 1959.

Southern Command.

Royal Australian Army Medical Corps (Medical).—3/129016 Major J. G. Sloman ceases to be seconded whilst in the United Kingdom, 30th June, 1959. 3/101932 Captain M. N. Lolagis is transferred to the Reserve of Officers (Royal Australian Army Medical Corps (Medical)) (Southern Command), 7th July, 1959.

Central Command.

Royal Australian Army Medical Corps (Medical).—4/32049 Captain J. B. Murchland is appointed from the Reserve of Officers, 12th August, 1959.

Reserve Citizen Military Forces.

Royal Australian Army Medical Corps (Medical).

Northern Command.—To be Honorary Captain, 18th September, 1959—James Cecil Pye.

Sotuhern Command.—To be Honorary Captains—Eric Doenau, 16th May, 1959; David Martin Simpkin, 1st June, 1959, and Russell Norman Ferguson, 2nd June, 1959.

Notice.

THE CHILDREN'S MEDICAL RESEARCH FOUNDATION OF N.S.W.

THE following is a list of donations to the Children's Medical Research Foundation of N.S.W. received from members of the medical profession in the period November 12 to 24, 1959.

Dr. Lindsay Dey (further), £25.

Dr. L. E. Goldsmith, Dr. N. Waddy (further), Dr. Angus Murray (further), Dr. G. B. Philip (further), £10 10s.

Dr. and Mrs. J. H. Stephenson, £10 0s. 6d.

Dr. Zenon Enis (further), Dr. R. G. Chambers (further), Dr. G. I. Wade (further), Dr. Colin E. Vickery (further), Dr. Sydney Brass, Dr. R. H. Warren (further), Dr. J. M. Wilshire (further), Dr. K. B. Kendall (further), Dr. K. B. North, Dr. Clyde Davis (further), Dr. G. C. Killen, £5 5s.

Dr. and Mrs. C. W. Whiting (further), £4 4s.

Dr. D. D. Bathgate (further), £3 3s.

Dr. Ruth Barry (further), £2 2s. 6d.

Dr. W. G. Epps (further), £2 2s.

Previously acknowledged: £9743 0s. 10d. Total received to date: £9889 7s. 10d.

Deaths.

THE following deaths have been announced:

FABIAN.—Ernst Fabian, on November 24, 1959, at Hobart.

GRAHAM.—Francis John Graham, on November 28, 1959, at Kogarah, N.S.W.

Diary for the Month.

DECEMBER 15.—New South Wales Branch, B.M.A.: Medical Politics Committee.

DECEMBER 17.—New South Wales Branch, B.M.A.: Public Relations Committee.

DECEMBER 22.—New South Wales Branch, B.M.A.: Hospitals Committee.

Medical Appointments: Important Notice.

MEDICAL PRACTITIONERS are requested not to apply for any appointment mentioned below without having first communicated with the Honorary Secretary of the Branch concerned, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

New South Wales Branch (Medical Secretary, 135 Macquarie Street, Sydney): All contract practice appointments in New South Wales.

South Australian Branch (Honorary Secretary, 80 Brougham Place, North Adelaide): All contract practice appointments in South Australia.

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ALL articles submitted for publication in this Journal should be typed with double or treble spacing. Carbon copies should not be sent. Authors are requested to avoid the use of abbreviations, other than those normally used by the Journal, and not to underline either words or phrases.

References to articles and books should be carefully checked. In a reference to an article in a journal, the following information should be given: surname of author, initials of author, year, full title of article, name of journal, volume, number of first page of article. In a reference to a book the following information should be given: surname of author, initials of author, year of publication, full title of book, publisher, place of publication, page number (where relevant). The abbreviations used for the titles of journals are those of the list known as "World Medical Periodicals" (published by the World Medical Association). If a reference is made to an abstract of a paper, the name of the original journal, together with that of the journal in which the abstract has appeared, should be given with full date in each instance.

Authors submitting illustrations are asked, if possible, to provide the originals (not photographic copies) of line drawings, graphs and diagrams, and prints from the original negatives of photomicrographs. Authors who are not accustomed to preparing drawings or photographic prints for reproduction are invited to seek the advice of the Editor.

Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary is stated.

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